

ATCA-7350

Installation and Use

P/N: 6806800G59G

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Overview of Contents

This document describes the ATCA-7350 server suite (hereinafter referred to as the ATCA-7350 suite) in the following aspects:

- Functions, features, and appearance of the ATCA-7350
- How to install, deploy, and maintain the ATCA-7350

The user must be a professional engineer, who has been trained and is able to identify danger levels when operating the device.

This manual is divided into the following chapters and appendices.

- [Chapter 1, Introduction, on page 21](#) describes the main features of the ATCA-7350.
- [Chapter 2, Hardware Preparation and Installation, on page 27](#) describes installation prerequisites including the blade installation itself.
- [Chapter 3, Controls, LEDs and Connectors, on page 59](#) describes external interfaces of the blade. This includes connectors and LEDs.
- [Chapter 4, Functional Description, on page 79](#) describes in more detail functional blocks of the blade. This includes a block diagram, description of the main components used and so on.
- [Chapter 5, System Management, on page 99](#) describes the main features of the IPMI firmware and how to work with it.
- [Chapter 6, BIOS, on page 117](#) describes the features and setup of BIOS.
- [Chapter 7, RAID 1 Operations, on page 135](#) describes the operations on RAID1.
- [Chapter 8, Software Upgrade, on page 159](#) describes how to upgrade software on the ATCA-7350 blade.
- [Chapter 9, Addressing, on page 167](#) describes about the PCI configuration map and the memory map.
- [Appendix A, Troubleshooting, on page 173](#) provides troubleshooting information.
- [Appendix B, Related Documentation, on page 193](#) provides links to further ATCA-7350-related documentation.

- [Safety Notes on page 195](#) lists safety notes applicable to the blade.
- [Sicherheitshinweise on page 201](#) is the German translation of the previous English safety notes.

Abbreviations

This document uses the following abbreviations:

Abbreviation	Definition
ACA	Australian Communications Authority
ATN	Attention
BIOS	Basic Input/Output System
BMC	Baseboard Management Controller
CMOS	Complementary Metal Oxide Semiconductor
DIMM	Dual Inline Memory Module
ECC	Error Checking and Correcting
EIA	Electronics Industries Association
EMC	Electromagnetic Compatibility
ESD	Electro-Static Discharge
FBD	Fully Buffer DIMM
FC	Fiber Channel
FCC	Federal Communications Commission
FRU	Field Replaceable Unit
GE	Gigabit Ethernet
IEC	International Electrotechnical Commission
IPMB	Intelligent Platform Management BUS
IPMC	Intelligent Platform Management Interface Controller
IPMI	Intelligent Platform Management Interface
IS	In Service

Abbreviation	Definition
KVM	Keyboard, Video, and Mouse
OOS	Out of Service
PCI	Peripheral Component Interconnect
PEM	Power Entry Module
POST	Power-On Self Test
RAID	Redundant Arrays of Independent Disks
RTM	Rear Transition Module
SAS	Serial Attached Small Computer System Interface
SCSI	Small Computer System Interface
SDR	Sensor Data Record
SEL	System Event Log
ShMC	Shelf Management Controller
SOL	Serial Over LAN

Conventions

The following table describes the conventions used throughout this manual.

Notation	Description
0x00000000	Typical notation for hexadecimal numbers (digits are 0 through F), for example used for addresses and offsets
0b0000	Same for binary numbers (digits are 0 and 1)
bold	Used to emphasize a word
Screen	Used for on-screen output and code related elements or commands in body text
Courier + Bold	Used to characterize user input and to separate it from system output
<i>Reference</i>	Used for references and for table and figure descriptions

Notation	Description
File > Exit	Notation for selecting a submenu
<text>	Notation for variables and keys
[text]	Notation for software buttons to click on the screen and parameter description
...	Repeated item for example node 1, node 2, ..., node 12
.	Omission of information from example/command that is not necessary at the time being
..	Ranges, for example: 0..4 means one of the integers 0,1,2,3, and 4 (used in registers)
	Logical OR
 WARNING XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Indicates a hazardous situation which, if not avoided, could result in death or serious injury
 CAUTION XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury
NOTICE XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Indicates a property damage message
	No danger encountered. Pay attention to important information

Summary of Changes

This manual has been revised and replaces all prior editions.

Part Number	Publication Date	Description
6806800G59A	September 2008	First edition
6806800G59B	November 2008	Second edition
6806800G59C	January 2009	Added Chapter 9, Addressing, on page 167
6806800G59D	January 2009	Fourth edition
6806800G59E	February 2009	Fifth edition
6806800G59F	February 2010	Updated section Standard Compliances on page 24 .
6806800G59G	September 2014	Re-branded to Artesyn template.

Introduction

1.1 Features

The ATCA-7350 server blade suite (hereinafter referred to as the ATCA-7350 suite) features the capabilities of high speed calculation and mass data processing.

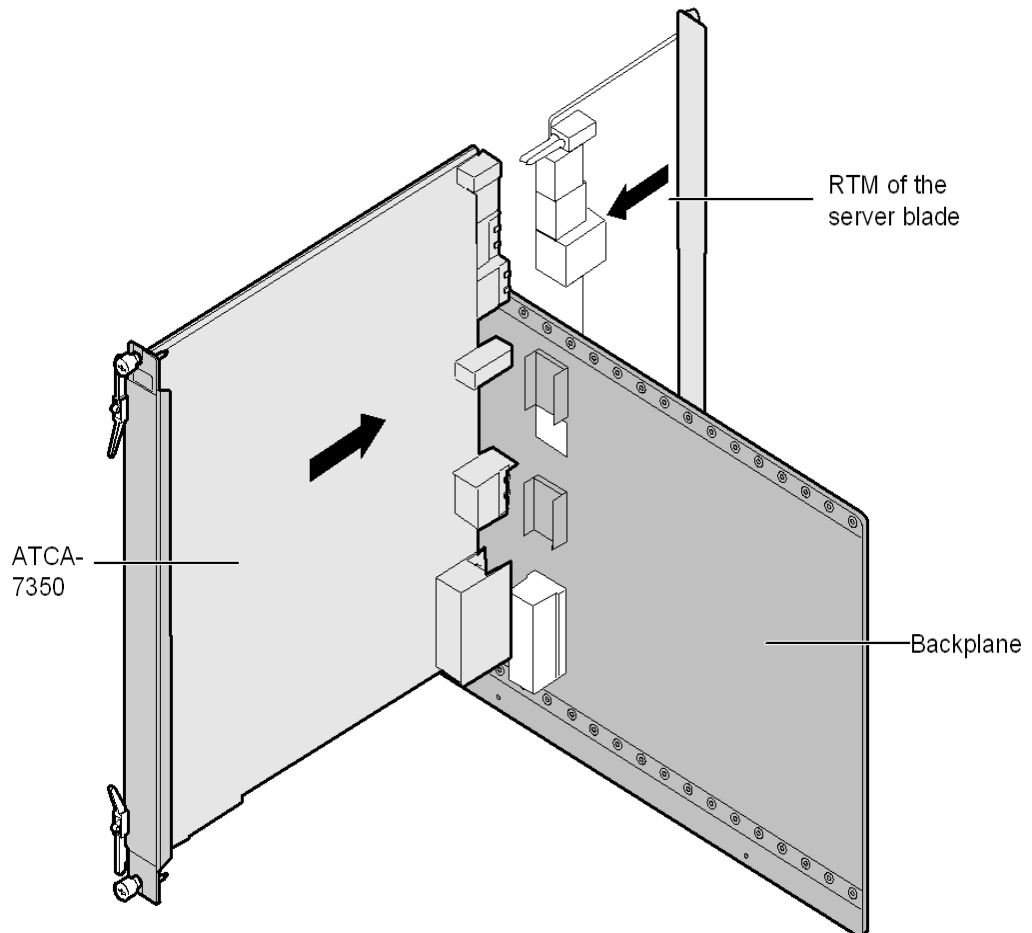
The ATCA-7350 suite consists of:

- ATCA-7350
The ATCA-7350 is the short form for the ATCA-7350 server blade.
- RTM-ATCA-7150
The RTM-ATCA-7150 is the short form for the RTM-ATCA-7150 rear transition module (RTM) of the server blade.
- RTM-ATCA-7350
The RTM-ATCA-7350 is the short form for the RTM-ATCA-7350 rear transition module (RTM) of the server blade. This RTM enables 10Gb/sec Ethernet on the ATCA fabric interface.

You can install the ATCA-7350 in any node slot of your shelf. The RTM-ATCA-7x50 is installed in the slot that is paired with the ATCA-7350 slot.

Figure 1-1 shows the connection between the ATCA-7350 and the RTM-ATCA-7x50.

Figure 1-1 Connection Between the ATCA-7350 and RTM-ATCA-7x50



The RTM-ATCA-7x50 is an accessory option that can be used for tailoring the ATCA-7350 to specific applications.

The backplane is one part of the shelf. For details on the backplane and shelf, refer to the respective system documentation.

Table 1-1 lists the functions of the ATCA-7350.

Table 1-1 Functions of the ATCA-7350

Function	Description
Processing functions	● Supports two quad-core LV Intel Xeon 5408 (2.13 GHz) processors ● Supports 12 MB L2 cache ● Supports up to four FB-DIMMs ● Supports DIMM capacities of 512 MB, 1 GB, 2 GB, 4 GB, or 8 GB. The maximum installed board memory capacity is 32 GB
Interface functions	● Provides 1GB onboard flash storage ● Provides two SAS ports on the front panel ● Provides two Ethernet Base interfaces (10/100/1000Base-T) ● Provides two Ethernet Fabric interfaces (1000Base-BX, 10GBASE-BX if RTM-ATCA7350 installed) ● Provides one Ethernet Update Channel interface (1000Base-BX) ● Provides two USB 2.0 interfaces (compatible with USB 1.1) ● Provides serial port to access CPU and IPMC serial console ● Provides two SAS on-board hard disks ● The RTM-ATCA-7x50 that works with the ATCA-7350 provides a monitor interface and a USB 1.1 interface. Through optional daughter cards, the RTM can provide, 2 or 4 GE interfaces or 2 FC interfaces. Only with RTM ATCA-7350 the system provides 10G Ethernet on its fabric interfaces.
Management functions	The ATCA-7350 provides the IPMC that is powered by system management power. The IPMC is connected to the ShMC through the redundant IPMB. The IPMC provides the following functions: ● Environmental sensors temperature, voltage ● System Event Logs ● Watchdog timer ● Power-on, power-off, cold reset ● SOL (Serial Over LAN) ● FRU Hot-swap management ● E-Keying control

Table 1-1 Functions of the ATCA-7350 (continued)

Function	Description
Integrated functions	● Gbit Ethernet controllers ● IPMI ● SAS storage controller ● Video controller

1.2 Standard Compliances

The product is designed to meet the following standards.

Table 1-2 Standard Compliances

Standard	Description
UL 60950-1 EN 60950-1 IEC 60950-1 CAN/CSA C22.2 No 60950-1	Legal safety requirements
CISPR 22 CISPR 24 EN 55022 EN 55024 FCC Part 15 Industry Canada ICES-003 VCCI Japan AS/NZS CISPR 22 EN 300 386 NEBS Standard GR-1089 ¹ CORE	EMC requirements (legal) on system level (predefined Artesyn Embedded Computing System)
NEBS Standard GR-63-CORE ETSI EN 300019 series	Environmental requirements
PICMG ² 3.0 PICMG 3.1 IPMI 1.5	Defines mechanics, blade dimensions, power distribution, power and data connectors, and system management

1. The blade does not fulfill the "Unpacked Equipment Shock Criteria" as defined in NEBS GR63 4.3.2. During tests which consisted of dropping the blade from 100 mm height, we observed that on some blades the AdvancedTCA zone 2 and 3 connectors got damaged. Although it was possible to manually repair the connectors and the blade was fully functional again afterwards, the criteria imposed by the NEBS standard were not fulfilled.

2. Some PICMG requirements are not fully met. Refer ATCA-7350/RTM-ATCA-7350 Release Notes for more information.

1.3 Ordering Information

When ordering board variants or board accessories, use the order numbers given on the following pages.

1.3.1 Supported Board Models

The following table explains the product nomenclature used for the available board variants.

Table 1-3 Product Nomenclature

Order Number	Description
ATCA-7350-0GB ATCA-7350-0GB-CK 1	ATCA PROCESSOR BLADE, DUAL HARPertown, QUAD CORE (2.13 GHZ), 0GB, 10G SUPPORT, 2 HDD/SSD SLOTS (ROHS 5/6)
RTM-ATCA-7350	RTM FOR THE ATCA-7350 BLADE WITH 10G FABRIC SUPPORT (ROHS 5/6)
RTM-ATCA-7350-GE	RTM FOR THE ATCA-7350 BLADE WITH 2 GE INTERFACES (ROHS 5/6)
RTM-ATCA-7350-2GE	RTM FOR THE ATCA-7350 BLADE WITH 4 GE INTERFACES (ROHS 5/6)
RTM-ATCA-7350-FC	RTM FOR THE ATCA-7350 BLADE WITH 2 FC INTERFACES (ROHS 5/6)
RTM-ATCA-7150-GE	RTM FOR THE ATCA-7150 BLADE WITH 2 GE INTERFACES (ROHS 5/6)
RTM-ATCA-7150-GE-FC	RTM FOR THE ATCA-7150 BLADE WITH 2 GE AND 2 FC INTERFACES (ROHS 5/6)
MEZC-RTM-7150-GE	MEZZANINE CARD WITH 2 GE INTERFACES (ROHS 5/6)
MEZC-RTM-7150-FC	MEZZANINE CARD WITH 2 FC INTERFACES (ROHS 5/6)
ATCA-7x50-MEM-2G ATCA-7x50-MEM-2G-F 1	2 GB FBD MEMORY MODULE FOR ATCA-7X50 (ROHS 6/6)
ATCA-7x50-MEM-4G ATCA-7x50-MEM-4G-F 1	4 GB FBD MEMORY MODULE FOR ATCA-7X50 (ROHS 6/6)

Table 1-3 Product Nomenclature (continued)

Order Number	Description
ATCA-7350-MEM-8G ATCA-7350-MEM-8G-F 1	8 GB DUAL RANK FBD MEMORY MODULE FOR ATCA-7350 (ROHS 6/6)
ATCA7x50-HDD1-SAS ATCA7x50-HDD1-SAS-F 1	72 GB SAS HDD FOR THE ATCA-7X50 (ROHS 6/6)
ATCA7x50-HDD2-SAS ATCA7x50-HDD2-SAS-F 1	146 GB SAS HDD FOR THE ATCA-7X50 (ROHS 6/6)
ATCA7x50-HDD3-SATA ATCA7x50-HDD3-SATA-F 1	80GB SATA HDD (EXT. TEMP.) FOR THE ATCA-7X50 (ROHS 6/6)
ATCA7x50-SSD2-SATA ATCA7x50-SSD2-SATA-F 1	32 GB SATA SSD FOR THE ATCA-7X50 (ROHS 6/6)

1.3.2 Board Accessories

As of the printing date of this manual, the following board accessories were available:

Table 1-4 Available Board Accessories

Board Accessories	Order Number
Gigabit Ethernet (GE) daughter card	MEZC-RTM-7150-GE
Fiber Channel (FC) daughter card	MEZC-RTM-7150-FC
Hard disk options	ATCA7X50-HDD1-SAS ATCA7X50-HDD1-SAS-F 1 ATCA7X50-HDD2-SAS ATCA7X50-HDD2-SAS-F 1 ATCA7X50-HDD3-SATA ATCA7X50-HDD3-SATA-F 1
Solid state disk	ATCA7X50-SSD2-SATA ATCA7X50-SSD2-SATA-F 1

Note: Board accessories are part of pre configured blade.

Hardware Preparation and Installation

2.1 Overview

This chapter describes:

- Unpacking and inspecting the blade
- Environmental and power requirements
- Precautions during the operation
- Checking the installation environment
- Installing accessories
- Installation and removal procedures
- Ejector handles

2.2 Unpacking and Inspecting the Blade

NOTICE

Damage of Circuits

Electrostatic discharge and incorrect installation and removal of the blade can damage circuits or shorten their life.

Before touching the blade or electronic components, make sure that you are working in an ESD-safe environment.

Shipment Inspection

To inspect the shipment, perform the following steps.

1. Verify that you have received all items of your shipment:
 - Printed *Quick Start Guide*
 - ATCA-7350 blade
 - Any optional items ordered
2. Check for damage and report any damage or differences to the customer service.

3. Remove the desiccant bag shipped together with the blade and dispose of it according to your country's legislation.



The blade is thoroughly inspected before shipment. If any damage occurred during transportation or any items are missing, please contact our customer's service immediately.

Unpacking the Blade

To unpack and check the ATCA-7350 suite, proceed as follows:

1. Wear the ESD-preventive wrist strap.
For more details, see [Wearing the ESD-Preventive Wrist Strap on page 34](#).
2. Lay the packing carton according to the arrow direction on the cover.
3. Cut the tape to open the packing carton.
4. According to [Table 2-1](#), check that the components are complete and in good condition, without defects such as oxidation, chemical corrosion, missing component, or transportation damage.

Table 2-1 List of Packing Items

SN	Description
1	Packing materials, such as packing carton, plastic package, and foam
2	Documentation bag, containing documents shipped with the product
3	ATCA-7350, which can be used with an RTM-ATCA-7150 or RTM-ATCA-7350 But 10G Ethernet support is only available with RTM-ATCA-7350.
4	RTM-ATCA-7150 or RTM-ATCA-7350, which must be used with an ATCA-7350
5	Desiccant bag



- The actual items in the packing carton are decided by the contract.
- If you do not order an RTM-ATCA-7x50, all functions provided by the RTM are not available.

2.3 Environmental and Power Requirements

The following environmental and power requirements are applicable to the blade.

2.3.1 Environmental Requirements

Table 2-2 Environmental Requirements

Requirement	Operating	Non-Operating
Temperature	+5°C (41°F) to +40°C (105°F) (normal operation) according to NEBS Standard GR-63-CORE -5°C to +55°C (exceptional operation) according to NEBS Standard GR-63-CORE ¹	-40°C (-40°F) to +70°C (158°F). ²
Temp. Change	+/- 0.25°C/min according to NEBS Standard GR-63-CORE	+/- 0.25°C/min
Rel. Humidity	5% to 85% non-condensing according to Artesyn-internal environmental requirements	5% to 95% non-condensing according to Artesyn-internal environmental requirements
Altitude	<=3000 m	
Maximum weight	4.0 kg	
Length x width x height	322.3 mm × 280 mm × 29 mm	
Vibration (tested in target platform)	1g from 5 to 100 Hz and back to 5 Hz at a rate of 0.25 octave/minute ³	5-20 Hz at 0.01 g ² /Hz 20-200 Hz at -3.0 dB/octave Random 5-20 Hz at 1 m ² /Sec ³ Random 20-200 Hz at -3 m/Sec ²
Shock	Half-sine, 11 m/Sec, 30mSec/sec ²	Blade level packaging Half-sine, 6 mSec at 180 m/Sec ²

Table 2-2 Environmental Requirements (continued)

Requirement	Operating	Non-Operating
Free Fall		1,200 mm (Packaged) /all edges and corners 1.0m (Packaged) per ETSI 300 019-2-2 (Blade level packaging) 25 mm (unpackaged) per GR-63-CORE

1. When operated in 55C ambient temperature and depending on the shelf's cooling capabilities the board is plugged into, the SAS hard disk surface temperature exceeds the specified maximum limit of 60C.
2. The SAS drives can meet this max temperature range of non-operating.
3. The vibration tolerance can be further limited due to the hard disk you are installing on the blade. Please refer to the respective datasheet for further information.

2.3.2 Power Requirements

Make sure that the blade is used in an AdvancedTCA shelf connected to -48VDC up to -60VDC, according to Telecommunication Network Voltage (TNV-2). A TNV-2 circuit is a circuit whose normal operating voltages exceed the limits for a safety-extra-low-voltage (SELV) under normal operating conditions, and which is not subject to overvoltages from telecommunication networks.

Table 2-3 lists the power requirements for the ATCA-7350.

Table 2-3 Power Requirements

Requirement	Operating
Rated Voltage	-48VDC to -60VDC US and Canada: -48VDC
Operating Voltage	-39.0VDC to -72VDC US and Canada: -39.0 to -60VDC
Input Current	3.75A at 48V
Power Dissipation	200W (max) 150W (typical)

The blade provides two independent power inputs according to the AdvancedTCA specification.

2.4 Precautions



CAUTION

Electric Shock

There is current in the power cords and communication cables. Touching the connectors of the power cords and communication cables may cause electric shock.
Do not touch the connectors of power cords and communication cables.

NOTICE

Electrostatic Discharge

Do not touch the circuit board with bare hands.

The static electricity of the human body may damage the electrostatic sensitive devices (ESDs) on the circuit board.

Make sure that you wear an electrostatic discharge (ESD)-preventive wrist strap or antistatic glove to prevent the static electricity from hurting you or damaging the device.

Keep your personal objects such as your clothes away from the ATCA-7350 suite. To prevent the static electricity from damaging the device, it is recommended to wear antistatic clothes.

Pin Damage

If the blade is not fully aligned with the interface in the backplane, too much force may twist the pins on the blade or backplane.

Do not exert too much force when you insert the blade.

Note the following points at the time of installing RTM-ATCA-7x50:

- If an RTM is planned to be used, you must install the RTM in the slot before installing the ATCA-7350 in the paired slot. If the ATCA-7350 is installed first and shelf power is turned on the RTM must not be installed in the paired slot.
- To take the ATCA-7350 suite, hold the captive screw on the top of the face plate with one hand and the lower edge of the blade with the other hand. Do not touch the components of the blade.

2.4.1 ESD Prevention

Static electricity may hurt you or damage the device. To minimize the damage, pay attention to the following points:

- Before you operate the device, wear the ESD-preventive wrist strap. Both terminals of the ESD-preventive wrist strap must contact well. One terminal touches your bare skin, and the other is inserted in the jack at the front or back side of the shelf. For details on how to wear the ESD-preventive wrist strap, see [Wearing the ESD-Preventive Wrist Strap on page 34](#).
- Avoid moving as much as possible. Movement gathers static electricity around you.
- Do not touch the solder point, pin, or bare circuit.
- Do not leave the device in the place where others can operate it.
- Install the device at once after you take it out of the antistatic package. If you need to lay down the device, place it back in the antistatic package. Do not lay the device on the shelf or cabinet.
- Monitor the temperature and humidity of the equipment room. Warm air decreases the humidity but increases the static electricity in the room.

NOTICE

Damage of Circuits

Electrostatic discharge and incorrect module installation and removal can damage circuits or shorten their life. Before touching the module or electronic components, make sure that you are working in an ESD-safe environment.

2.5 Checking the Installation Environment

Table 2-4 lists the environment for installing the ATCA-7350 suite.

Table 2-4 Environment for Installing the ATCA-7350 Suite

Item	Description
Cabinet	Cabinet that complies with the IEC297 standard Note: Leave enough space around the cabinet. Prevent air blocking of fans and provide controlled ambient air at shelf air-inlet to ensure sufficient airflow and appropriate heat exchange in the shelf.
Shelf	Shelf of the system Note: Consider heat dissipation when you choose slots to install blades. If the shelf is not fully configured, install the blades in scattered slots. Unoccupied slots must be protected with appropriate blank filler blades to prevent air leaks.

2.5.1 Wearing the ESD-Preventive Wrist Strap

NOTICE

Product Damage

Electrostatic discharge can damage circuits or shorten their life.

The ESD-preventive wrist strap prevents only the static electricity on your body from damaging the blade. To prevent the static electricity on your clothes, it is recommended to wear the antistatic clothes. Additionally, you have to make sure that the cabinet and shelf are properly grounded - for details, refer to the respective system documentation.

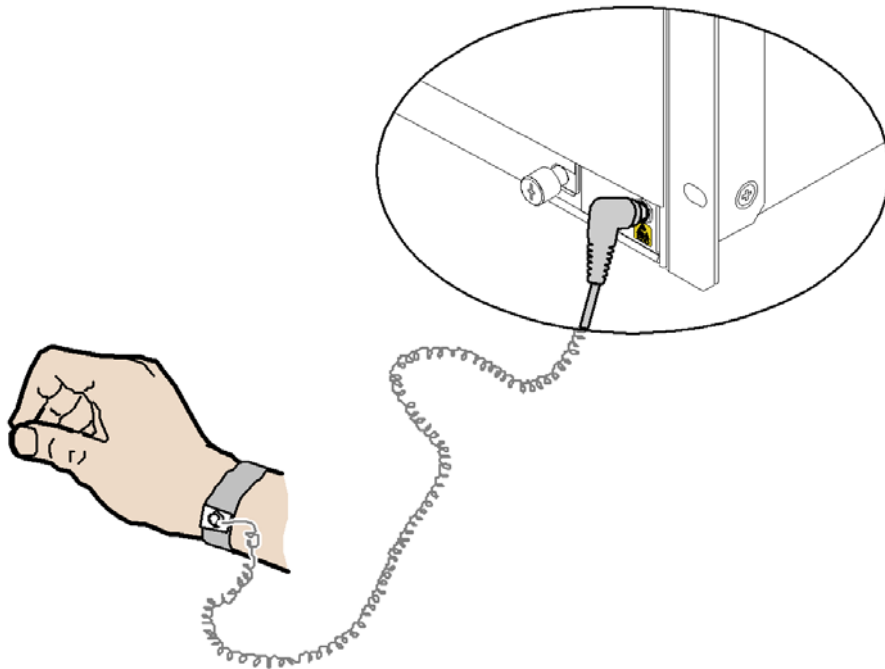


The cable of an ESD-preventive wrist strap is limited. In this case, before you wear the ESD-preventive wrist strap, place the device within 0.5 m away from the shelf.

To wear the ESD-preventive wrist strap, proceed as follows:

1. Wrap the ESD-preventive wrist strap around your wrist, as shown in [Figure 2-1](#).
2. Fasten the latch. Make sure that the ESD-preventive wrist strap well touches your bare wrist.
3. Insert the grounding terminal of the ESD-preventive wrist strap in the jack of the cabinet or shelf.

Figure 2-1 Wearing the ESD-Preventive Wrist Strap



2.5.2 Removing Blank Filler Blades

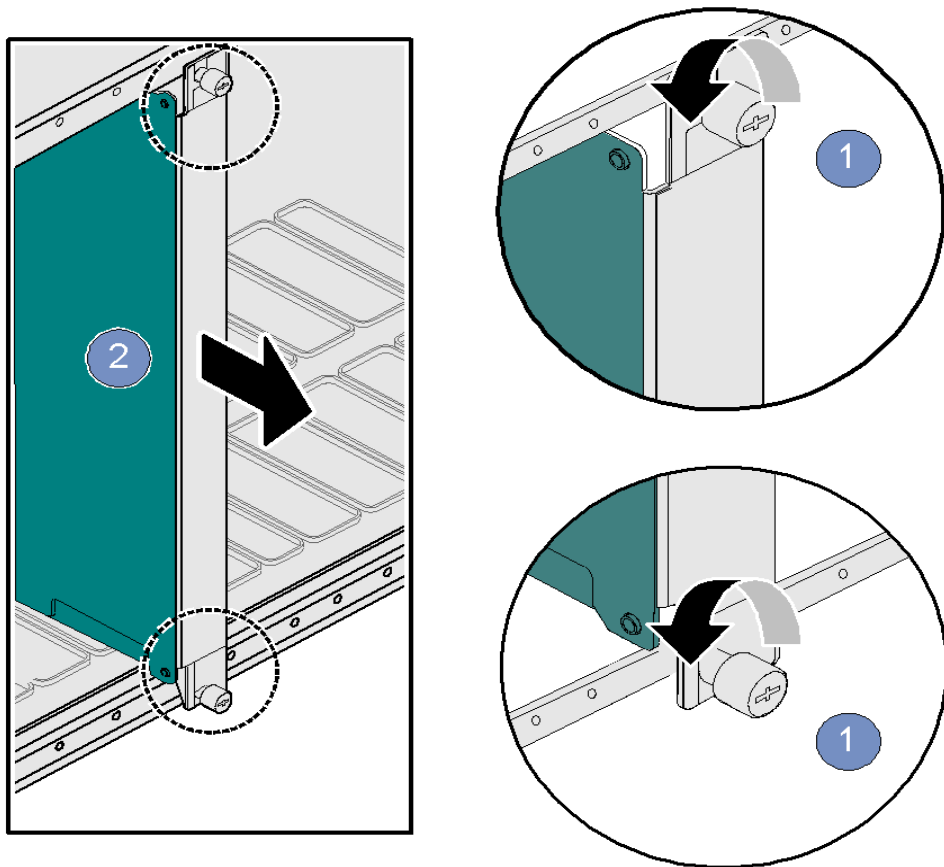


- After you remove a blank filler blade, store it in the equipment room or a damp-proof and dust-proof place.
- After you remove a blade from the shelf, install a blank filler blade in vacant slot. Otherwise, the functions such as ventilation, heat dissipation, electromagnetic shield, and dust proof may be affected.
- For a newly-delivered shelf, you can remove all blank filler blades and then install blades in all slots when the shelf is not powered on.
- If a shelf is powered on, you can remove a blank filler blade and then install a blade. In this way, install multiple blades one by one.

Before you install the ATCA-7350 suite, remove blank filler blades from installation slots as follows:

1. Use a screwdriver anticlockwise to loosen the two captive screws on a blank filler blade, as shown in [Figure 2-2](#).
2. Pull the blank filler blade out of the slot, as shown in [Figure 2-2](#).

Figure 2-2 Removing the Blank filler blade



2.6 Installing Blade Accessories

2.6.1 Precautions

	⚠ CAUTION
	Electric Shock There is current in the power cords and communication cables. Touching the connectors of the power cords and communication cables may cause electric shock. Do not touch the connectors of power cords and communication cables.

When you install or replace components, pay attention to the following points:

- Wear the ESD-preventive wrist strap to prevent the static electricity from damaging the device.
- Keep the area where the components reside clean and keep the components away from the heat generating devices, such as radiator.
- Ensure that your sleeves are tightened or rolled up above the elbow. For safety purpose, it is not recommended to wear jewelry, watch, glasses with metal frame, or clothes with metal buttons.
- Do not exert too much force, or insert or remove the components forcibly. Avoid damage to the components or plug-ins.

2.6.2 Optional Components Supported by the ATCA-7350

NOTICE

Only those who are certificated or authorized by Artesyn can replace or change the components.

Table 2-5 lists the optional components supported by the ATCA-7350.

Table 2-5 Optional Components Supported by the ATCA-7350 Suite

Blade	Supported Component
ATCA-7350	DIMM
	Hard disk
	Daughter cards on the RTM



For more information on the daughter cards, refer to RTM-ATCA-7x50 Installation and Use Manual, MESC-RTM-7150-FC Installation Information, and MESC-RTM-7150-GE Installation Information.

2.6.3 Preparations

Before you install or replace the component, make the following preparations:

- Confirming the feasibility of the operation
 - There are available spare parts of the component to be installed or replaced in the equipment warehouse. When the available spare parts are lacking, contact Artesyn Embedded Technologies for help in time.
 - Make sure that the new component is in good condition, without defects such as oxidation, chemical corrosion, missing component, or transportation damage.
 - By reading this document, you are familiar with how to install and replace the component and master the skills required by the operation.
- Checking the environment

Make sure that the shelf, power supply, temperature, and humidity meet the operating requirement for the blades and components. For details, refer to the respective system documentation.
- Preparing spare parts and tools
 - Prepare the component to be installed or replaced.
When you hold or transport the component, use the special antistatic package. Also, you need to tidy, record, and repair the component during routine maintenance.
 - Prepare the cross screwdriver, screws, plastic supports, cooling gel, and ESD-preventive wrist strap.
The supplier provides a list of tools and negotiates with to decide the tool provider.
- Confirming installation or changing position

Confirm the positions of the cabinet, the shelf, and the slot where the ATCA-7350 is installed. Then, stick a label on the face plate of the ATCA-7350 to avoid wrong operation.
- Others

If a serious problem occurs and cannot be solved when you install or replace the component, contact Artesyn for technical support.

2.6.4 DIMM

When you install or replace the DIMM, pay attention to the following points:

- The ATCA-7350 provides four DIMM interfaces and supports the DIMM with a capacity of 512 MB, 1 GB, 2 GB, 4 GB, or 8 GB.
- The DIMMs must have the same size, frequency, type, and technology, physical design and manufacturer.
- DIMMs must be of single or dual rank type. Quad rank types are not supported.
- If the selected memory configuration does not require population of all available DIMM slots, install the required DIMMs as follows:
 - If one DIMM is configured, install it in DIMM slot 0.
 - If two DIMMs are configured, install them in DIMM slots 0 and 1.
 - Configuring three DIMMs is not supported.

Figure 2-3 shows the positions of the DIMM interfaces on the ATCA-7350.

Figure 2-3 *Positions of the DIMM Interfaces*

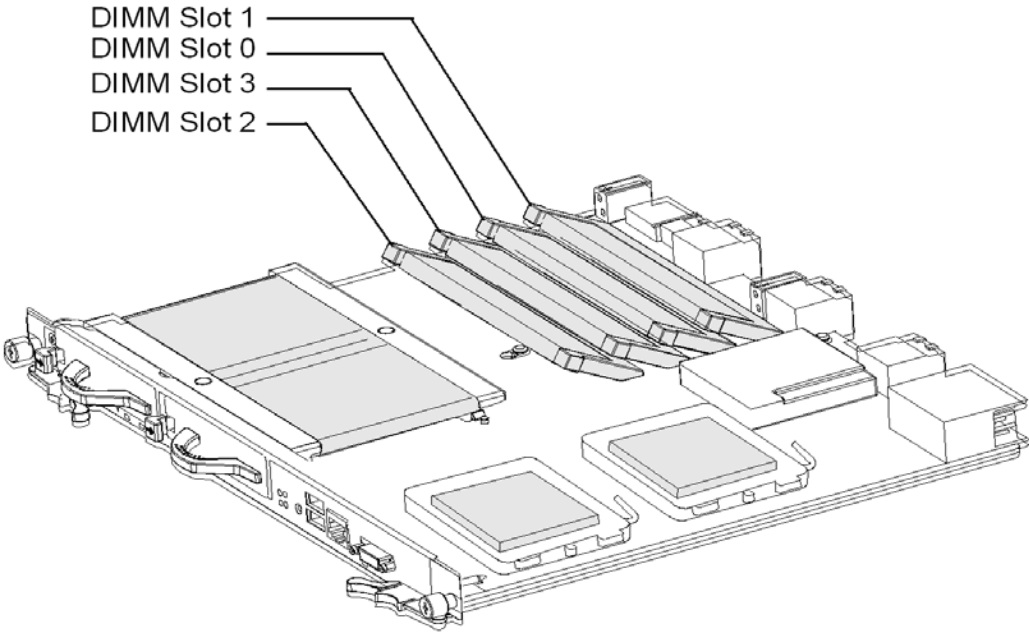


Table 2-6 DIMM Configuration on the ATCA-7350

Number of DIMMs	Installation Positions			
	DIMM Slot0	DIMM Slot1	DIMM Slot2	DIMM Slot3
1	x			
2	x	x		
4	x	x	x	x

2.6.4.1 **Installing the DIMM**

To install the DIMM, proceed as follows:

- 1. Wear the ESD-preventive wrist strap.
 For details, see [Wearing the ESD-Preventive Wrist Strap on page 34](#).

2. Lay the ATCA-7350 where the DIMM is to be installed on the antistatic desktop.
3. Take the DIMM out of the antistatic package.
4. Make sure that the two interface fixing clips of the DIMM socket are fully open. Adjust the DIMM to align it with the DIMM socket.

NOTICE

Product Damage

Operate the fixing clips slightly to avoid breaking them or damaging the DIMM socket.

5. Insert the DIMM in the socket along the guide rails, as shown in [Figure 2-4](#).

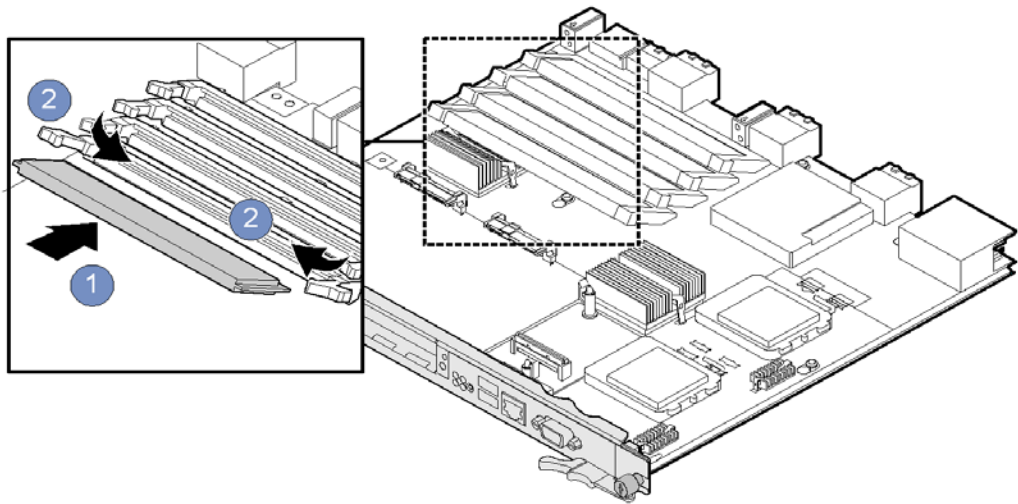


If there is a gap between the DIMM and the fixing clips, the DIMM is not installed properly. In this case, open the fixing clips and remove the DIMM. Then, insert the DIMM again.

6. Make sure that the fixing clips are fastened or closed firmly as shown in [Figure 2-4](#).

7. Insert the ATCA-7350 with the DIMM installed in the shelf.
For details, see [Installing the ATCA-7350 in a Powered Shelf on page 51](#).

Figure 2-4 Installing the DIMM



You can install the DIMMs in all DIMM sockets in the same way.

After installation, insert the ATCA-7350 in the shelf and power on the ATCA-7350. Check whether the OS can be loaded properly. If it can be, in the OS, check whether the displayed memory capacity is consistent with the actual one.

2.6.4.2 Replacing the DIMM

To replace the DIMM, proceed as follows:

1. Wear the ESD-preventive wrist strap.
For details, see [Wearing the ESD-Preventive Wrist Strap on page 34](#).

2. Remove the ATCA-7350 whose DIMM is to be replaced.
For details, see [Removing the ATCA-7350 on page 55](#).

NOTICE

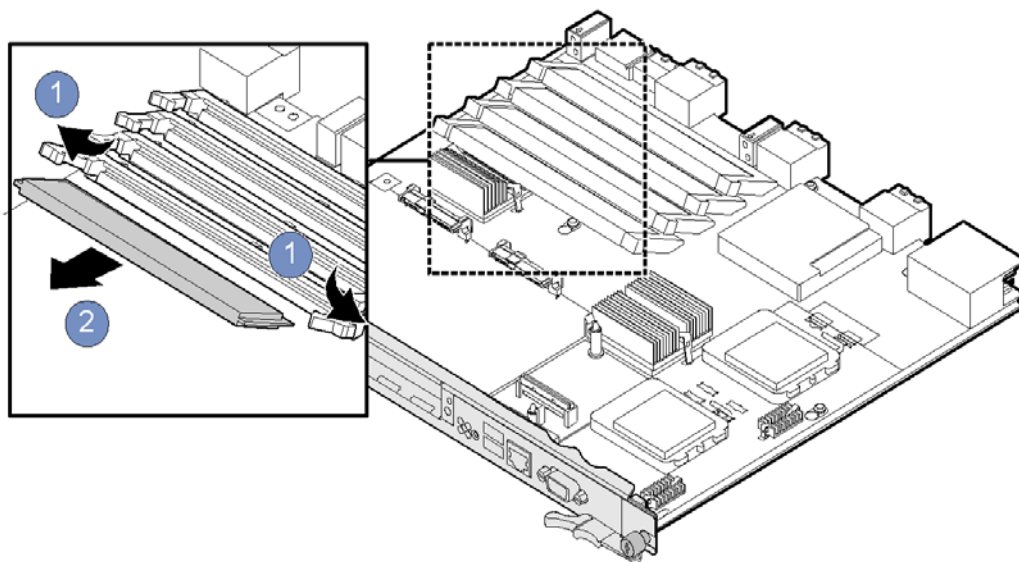
Product Damage

- To avoid breaking them or damaging the DIMM sockets, do not exert too much force to operate the fixing clips.
- If you open the two fixing clips of the DIMM at the same time, the DIMM bounces from the interface. Operate the fixing clips carefully to avoid damaging the DIMM.

3. Open one fixing clip of the DIMM carefully until the DIMM rises from the interface. Hold the top edge of the DIMM and open the other fixing clip carefully until the DIMM is removed from the interface, as shown in [Figure 2-5](#).
4. Take the DIMM out of the socket carefully, as shown in [Figure 2-5](#).
5. Place the extracted DIMM in the antistatic package.
6. Take the new DIMM out of the antistatic package.
7. Install the new DIMM.
For details, see [Installing the DIMM on page 42](#).

8. Install the ATCA-7350 with the DIMM replaced.
For details, see [Installing the ATCA-7350 in a Powered Shelf on page 51](#).

Figure 2-5 Removing the DIMM



After replacement, check whether the OS can be loaded properly. If it can be, in the OS, check whether the displayed memory capacity is consistent with the actual one.

2.6.5 Hard Disk

This section describes how to install and replace the hard disk on the ATCA-7350.

2.6.5.1 Installing the Hard Disk

For more information on the installation of the hard disk, refer to the *HDD Installation Sheet*.

To install the hard disk, proceed as follows:

1. Wear the ESD-preventive wrist strap.
For details, see [Wearing the ESD-Preventive Wrist Strap on page 34](#).
2. Take the hard disk to be installed out of the antistatic package.

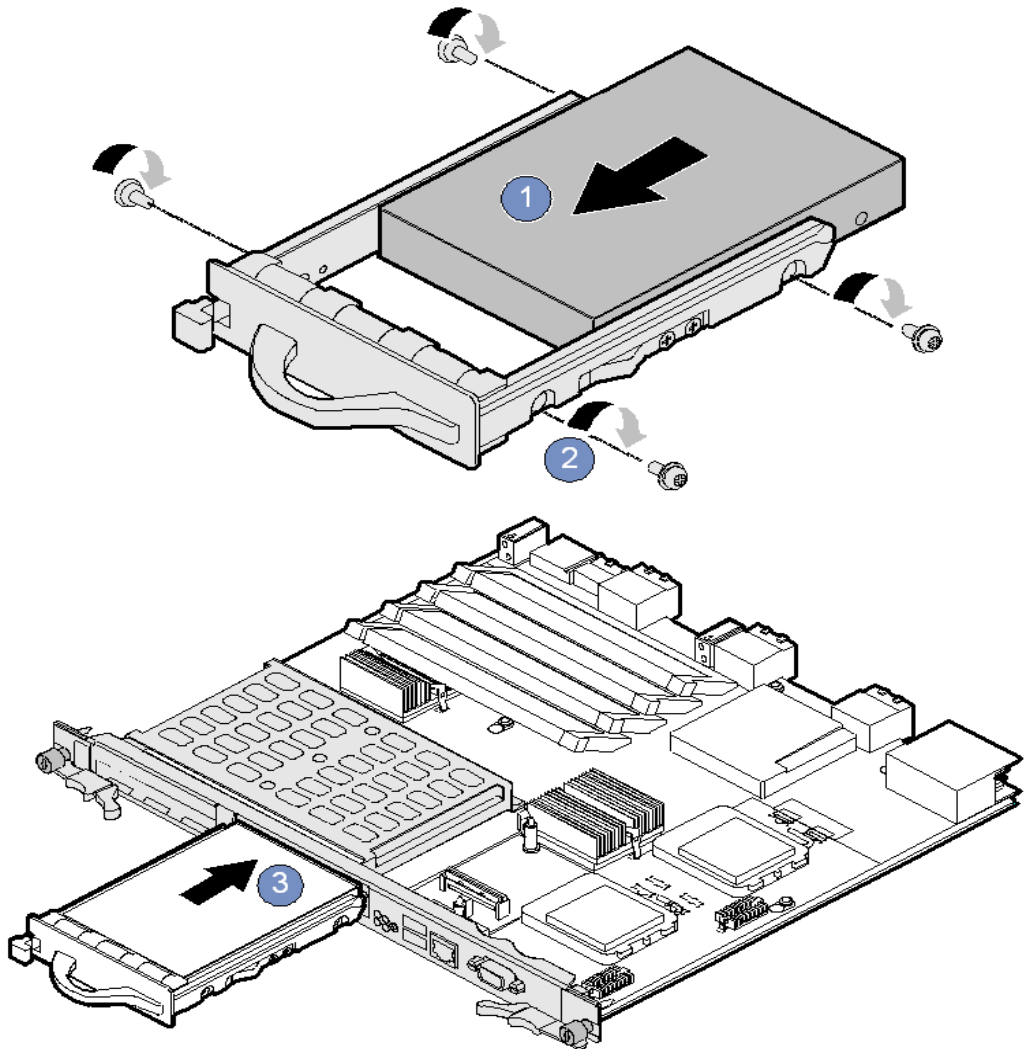
3. Exert even force to push the hard disk smoothly in the hard disk holder. Align the screw holes at the sides of the hard disk with those at the sides of the holder, as shown in [Figure 2-6](#).
4. Use the screwdriver to fasten the four screws clockwise to fix the hard disk, as shown in [Figure 2-6](#).
5. Exert even force to push the hard disk in the fixing bracket on the ATCA-7350, as shown in [Figure 2-6](#).
6. Insert the ATCA-7350 with the hard disk installed in the shelf if not already installed in the system.
For details, see [Installing the ATCA-7350 in a Powered Shelf on page 51](#).



You can install the other hard disk in the same way.

After installation, check whether the ATCA-7350 can be powered on and work normally or continuous to operate normally after the drive hot-swap. Check whether the data in the hard disk can be read and written normally. See section RAID Operations and Disk Hot-swap for further required steps.

Figure 2-6 Installing the Hard Disk



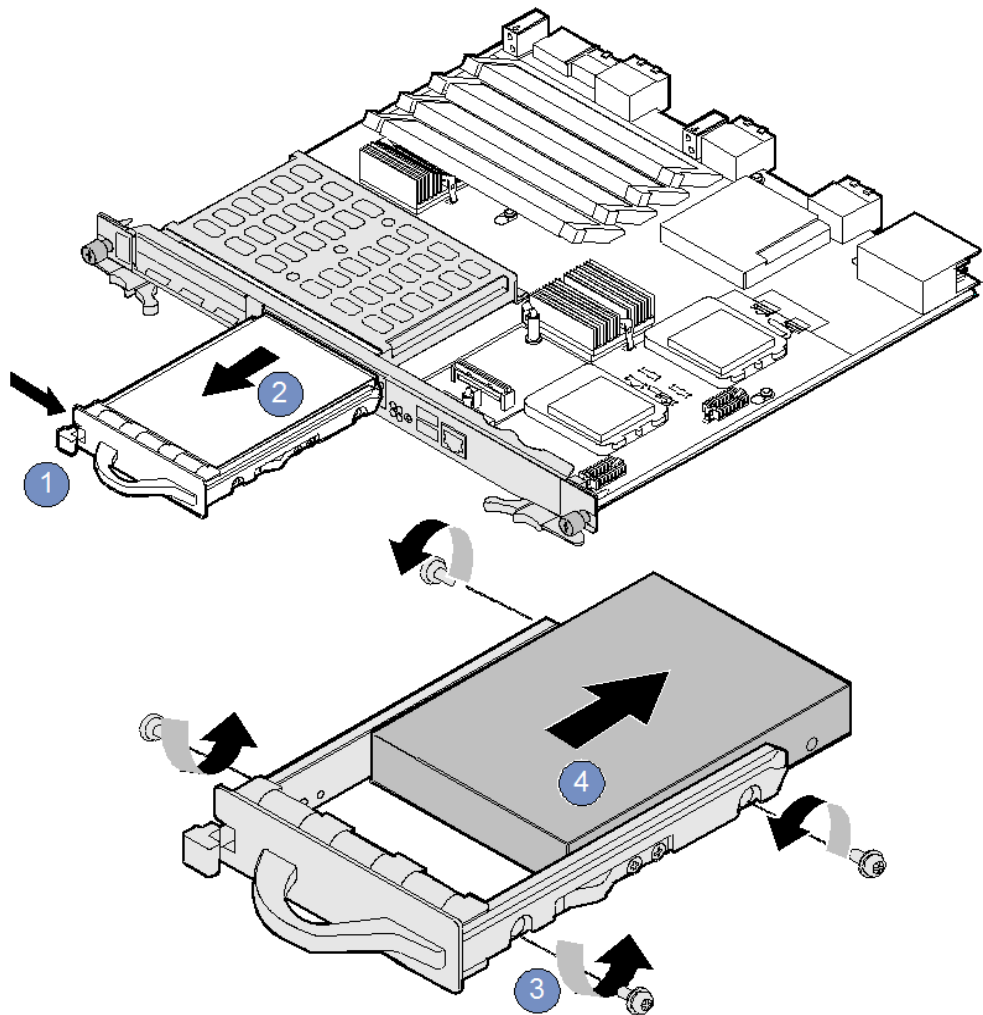
2.6.5.2 Replacing the Hard Disk

To replace the hard disk, proceed as follows:

1. Wear the ESD-preventive wrist strap.
For details, see [Wearing the ESD-Preventive Wrist Strap on page 34](#).
2. Remove the ATCA-7350 whose hard disk is to be replaced if the blade is powered down. Keep the ATCA-7350 in the occupied slot and keep the ATCA handles closed if the hard disk shall be replaced by hot-swap. See [Chapter 7, RAID 1 Operations, on page 135](#) for required steps to perform the disk hot-swap.
For details, see [Removing the ATCA-7350 on page 55](#).
3. Remove the finger on the hard disk holder in a direction as shown in [Figure 2-7](#) to unlock the hard disk.
4. Exert even force to pull the hard disk holder from the fixing bracket, as shown in [Figure 2-7](#).
5. Unfasten the four screws used to fasten the hard disk anticlockwise, as shown in [Figure 2-7](#).
6. Exert even force to pull the hard disk from the holder, as shown in [Figure 2-7](#).
7. Place the extracted hard disk in the antistatic package.
8. Take the new hard disk out of the antistatic package.
9. Install the new hard disk.
For details, see [Installing the Hard Disk on page 46](#).
10. Install the ATCA-7350 with the hard disk replaced if not already installed in the system.
For details, see [Installing the ATCA-7350 in a Powered Shelf on page 51](#).

After replacement, check whether the ATCA-7350 can be powered on and work normally or continuous to operate normally after the drive hot-swap. Check whether the data in the hard disk can be read and written normally. See [Chapter 7, RAID 1 Operations, on page 135](#) for further required steps.

Figure 2-7 Removing the Hard Disk



2.7 Installing and Removing the Blade

2.7.1 Installation

RTM-ATCA-7x50 must be installed before the ATCA-7350 to avoid product damage. For more information on RTM-ATCA-7x50, refer to *RTM-ATCA-7150 Installation and Use* manual and *RTM-ATCA-7350 Installation and Use* manual.

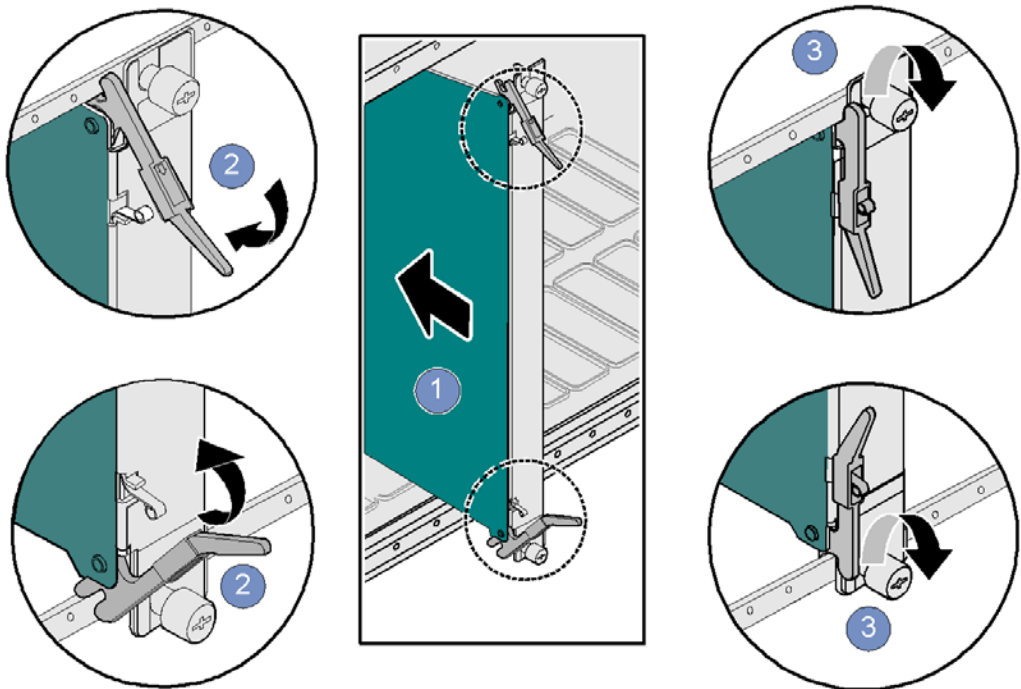
2.7.1.1 Installing the ATCA-7350 in a Powered Shelf

The following procedure describes the installation of the blade. It assumes that your system is powered. If your system is unpowered, you can disregard the blue LED and thus skip the respective step. In this case it is a purely mechanical installation.

1. Wear the ESD-preventive wrist strap.
For details, see [Wearing the ESD-Preventive Wrist Strap on page 34](#)
2. Take the ATCA-7350 out of the antistatic package.
3. Fully open the upper and lower ejector handles.
4. Slide the ATCA-7350 along the guide rails until the positioning pins of the ATCA-7350 are inserted in the positioning holes in the shelf, as shown in [Figure 2-8](#).
5. Make sure that the upper and lower ejector handles are attached to the beam properly. Close the upper and lower ejector handles until the inner sides of the ejector handles are attached to the face plate, as shown in [Figure 2-8](#). After closing the handles, the blue LED, OOS and IS LEDs blink. When payload is powered on, the blue LED is continuously illuminated, and the OOS and IS LEDs are out.
6. Use the screwdriver to clockwise fasten the screws to fix the ATCA-7350, as shown in [Figure 2-8](#).

7. Fully open the ejector handles and the ATCA-7350 is ready for power-on. Before you power on the ATCA-7350, connect the required external cables and check that the ATCA-7350 is installed properly.
For the details on how to power on the ATCA-7350, see [Blade Power-On](#) on page 53.

Figure 2-8 Installing the ATCA-7350



2.7.1.2 Checking the Installation

After you install the RTM-ATCA-7x50 and ATCA-7350, and connect and bind cables, check whether:

- The ATCA-7350 and RTM are installed in the paired slots.
- The upper and lower ejector handles of the RTM are fully closed.
- The cables are properly connected.
- The cables are well bound.

2.7.1.3 Blade Power-On

NOTICE

The RTM-ATCA-7x50 is powered by the ATCA-7350 in the slot paired with the RTM slot. The RTM-ATCA-7x50 does not support hot swap. Therefore, the RTM must be installed in the slot before the ATCA-7350 is powered or shelf power is turned on.

2.7.1.3.1 Checks Before Blade Power-On

Before power-on, you need to confirm that:

- The RTM-ATCA-7x50 and SMM are installed properly.
- The shelf and SMM are powered on properly.
- The required external cables are connected.
- The upper and lower ejector handles of the ATCA-7350 are opened.

2.7.1.3.2 Procedure

To power on the ATCA-7350, proceed as follows:

1. Wear the ESD-preventive wrist strap.
For details, see [Wearing the ESD-Preventive Wrist Strap on page 34](#).
2. Close the upper and lower ejector handles.
The HOTSWAP LED blinks at the short blink rate. The OOS and IS LEDs blink for 10 times at the same time. When the OOS is on (red) and the HOTSWAP LED is off, the ATCA-7350 is powered on properly.
Payload Management software is responsible for controlling the OOS and IS LED.

2.7.2 Removal

NOTICE

- Before you remove an ATCA-7350 or RTM-ATCA-7x50, prepare packing materials, such as an antistatic package.
- Before you remove an ATCA-7350 or RTM-ATCA-7x50, power off the ATCA-7350. For details on how to power off the ATCA-7350, see [Power Off on page 54](#).

2.7.2.1 Power Off

NOTICE

The RTM-ATCA-7x50 is powered by the ATCA-7350 in the slot paired with the RTM slot. The RTM-ATCA-7x50 does not support hot swap. You can remove the RTM only when the ATCA-7350 is powered off or if the shelf power is off.

2.7.2.1.1 Checks Before Power-Off

Before power-off, you need to confirm that:

- Data has been saved on the ATCA-7350.
- No application runs on the ATCA-7350.
- The ATCA-7350 has quitted the operating system (OS).

2.7.2.1.2 Procedure

To power off the ATCA-7350, proceed as follows:

1. Wear the ESD-preventive wrist strap.
For details, see [Wearing the ESD-Preventive Wrist Strap on page 34](#).

2. Open the upper and lower ejector handles.
The ATCA-7350 is powered off properly when:
 - The HOTSWAP LED blinks at the short blink rate and then is on (blue).
 - The OOS LED is on (red) if it is in local control state.
 - The IS LED is off if it is in local control state.

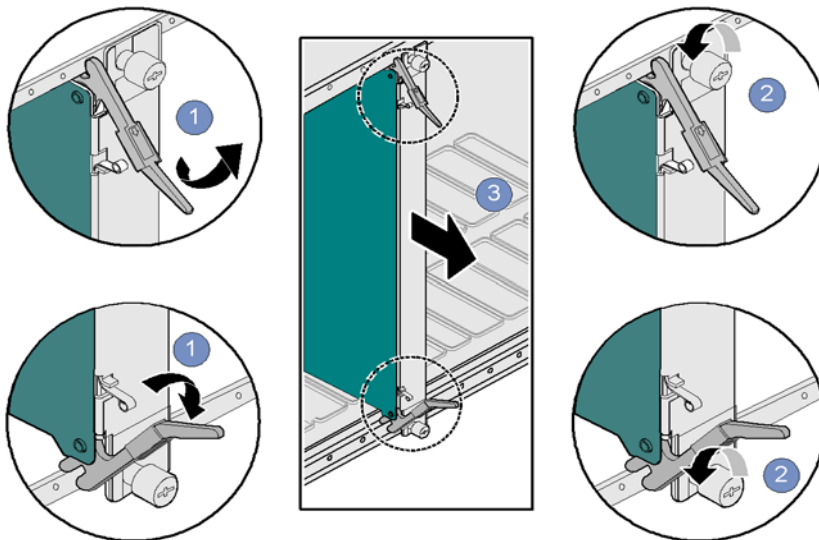
2.7.2.2 Removing the ATCA-7350

To remove the ATCA-7350, proceed as follows:

1. Wear the ESD-preventive wrist strap.
For details, see [Wearing the ESD-Preventive Wrist Strap on page 34](#).
2. Open the upper and lower ejector handles to power off the ATCA-7350, as shown in [Figure 2-9](#).
For details, see [Power Off on page 54](#).
3. Use the screwdriver to unfasten the captive screws anticlockwise, as shown in [Figure 2-9](#).

4. Remove the ATCA-7350 along the guide rails, as shown in [Figure 2-9](#).
5. Place the ATCA-7350 in the antistatic package.

Figure 2-9 Removing the ATCA-7350



2.7.2.3 Removing the RTM-ATCA-7x50

NOTICE

Product Damage

You should power off the front blade before removing RTM-ATCA-7x50.

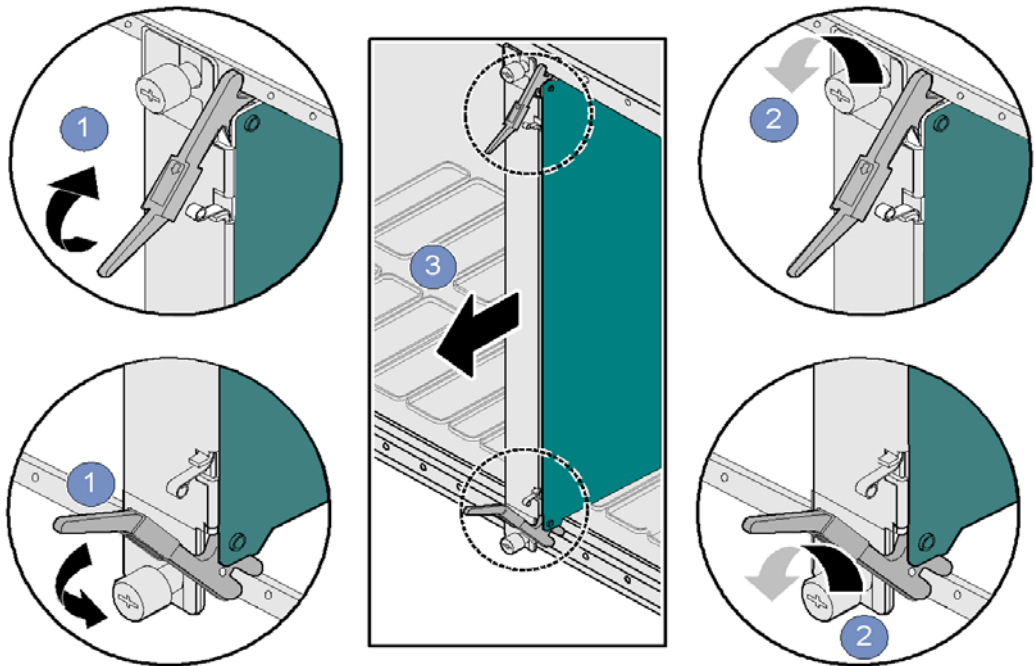


For details on how to power off the front blade, refer to the respective system documentation.

To remove RTM-ATCA-7x50, proceed as follows:

1. Wear the ESD-preventive wrist strap.
For details, see [Wearing the ESD-Preventive Wrist Strap](#) on page 34.
2. Use the screwdriver to unfasten the captive screws anticlockwise, as shown in [Figure 2-10](#).
3. Fully open the upper and lower ejector handles, as shown in [Figure 2-10](#).
4. Remove RTM-ATCA-7x50 along the guide rails, as shown in [Figure 2-10](#).
5. Place RTM-ATCA-7x50 in the antistatic package.

Figure 2-10 Removing RTM-ATCA-7x50



For more information refer to the *RTM-ATCA-7150 Installation and Use* manual and *RTM-ATCA-7350 Installation and Use* manual.

Controls, LEDs and Connectors

3.1 Overview

This chapter describes:

- Blade layout
- Face plate
- Connectors
- LEDs

3.2 Blade Layout

Figure 3-1 shows the components of the ATCA-7350.

Figure 3-1 Components of the ATCA-7350

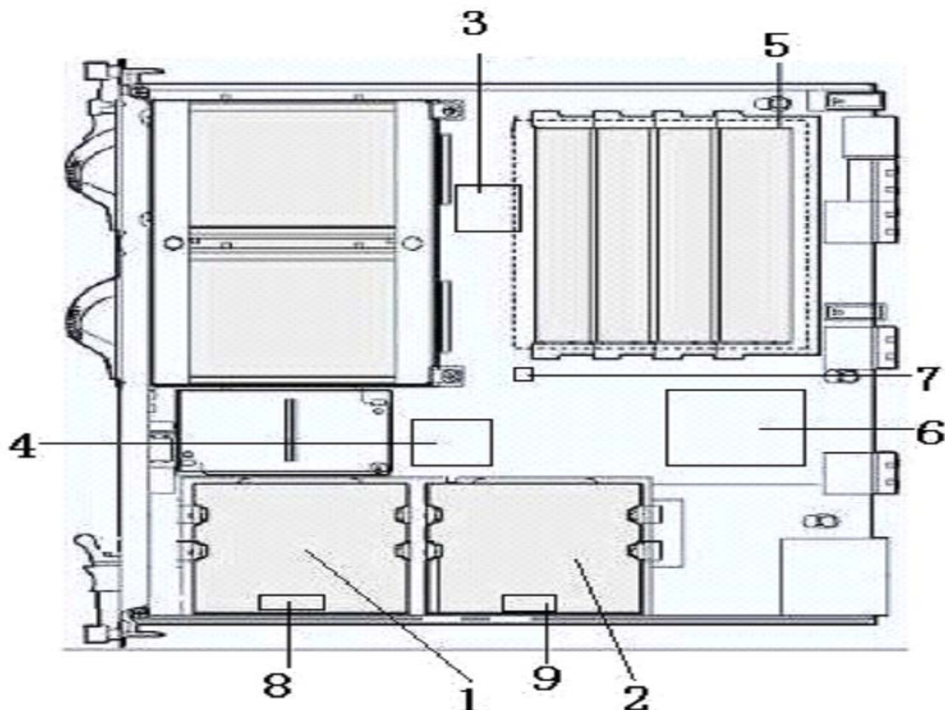


Table 3-1 lists the components of the ATCA-7350.

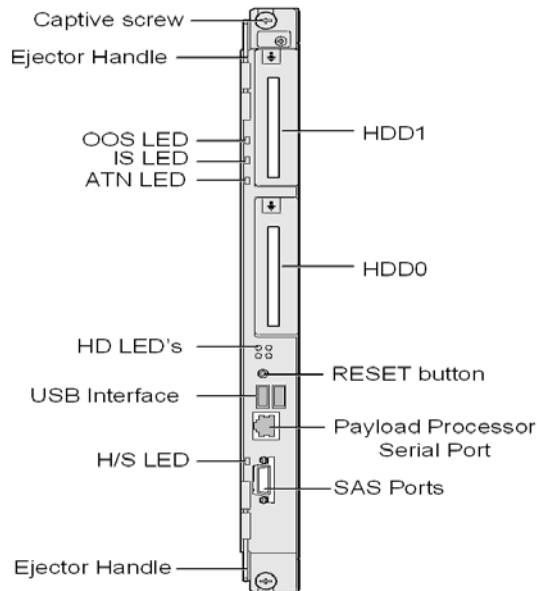
Table 3-1 Components of the ATCA-7350

Location	Component	Description
1, 2	Processor	The ATCA-7350 uses the Intel quad-core LV Xeon processor, with low power consumption.
3	I/O Controller Hub	Intel 631xESB/632xESB.
4	MCH	Intel 5000 Series Chipset Memory Controller Hub
5	DIMM's	Up to 4 DIMM's are supported.
6	power converter 48V-12V	
7	DC/DC converter 12V-3.3V	
8	Voltage Regulator of cpu	
9	Voltage Regulator of cpu	

3.3 Face Plate

Figure 3-2 shows the face plate of the ATCA-7350.

Figure 3-2 Face Plate of the ATCA-7350



3.4 Connectors

Connectors along the rear edge of ATCA server blades are divided into three distinct zones, as described in Section 2.3 of the PICMG 3.0 Specification:

- Zone 1 for system management and power distribution
- Zone 2 for data transport
- Zone 3 for the rear transition module

On the ATCA-7350, Zone 2 is composed of two connectors P20 and P23. In addition, the ATCA-7350 uses update channel interfaces defined in P20, as well as Base interfaces and Fabric interfaces defined in P23.

The face plate of the ATCA-7350 provides:

- Two USB interfaces
- Two 2.5 inch SAS hard disk drive bays
- One RJ-45 serial port
- One SAS Connector

Figure 3-3 On-Board Connectors

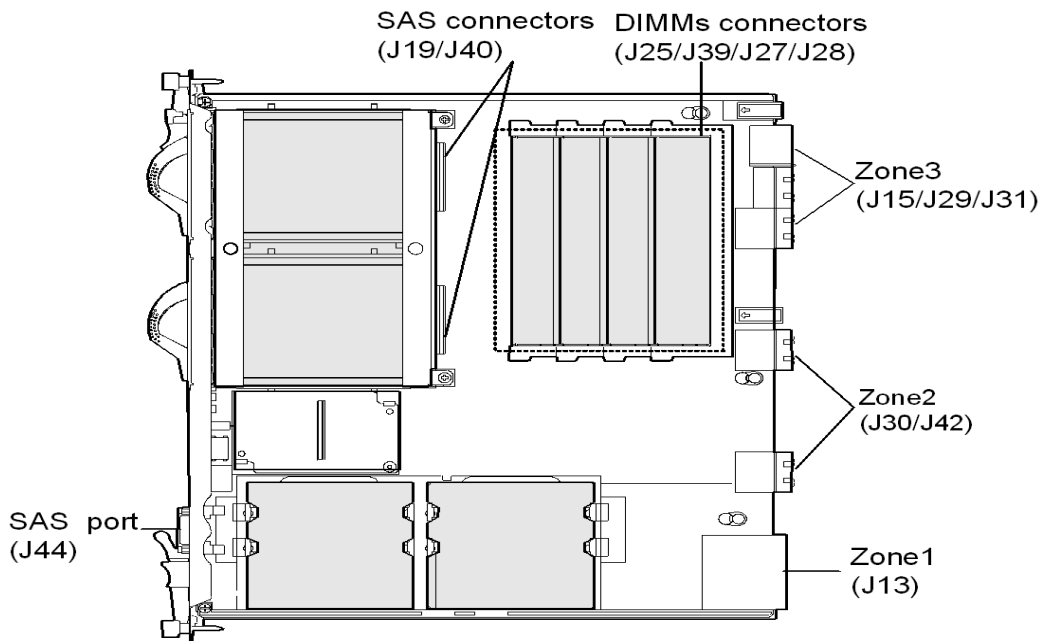


Figure 3-4 Face Plate Connectors

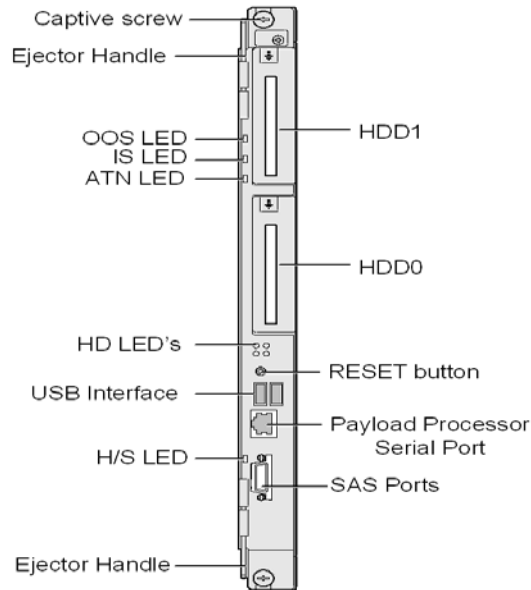


Table 3-2 lists the locations and description of all connectors on the ATCA-7350.

Table 3-2 Positions and Description of the Connectors of the ATCA-7350

Location	REFDES	Description	Details
Back plane Connectors	J13	Zone1 (P10)	34-Pin, dual redundant -48 VDC power, metallic test, ringing generator, Shelf management system connections, and Hardware Addressing
	J42	Zone2 (P20)	8*10-Pin, Update channel GE interface
	J30	Zone2 (P23)	8*10-Pin, Base & Fabric Interfaces
	J15	Zone3	5*11-Pin, RTM Power supply, KVM, IPMC RTM management
	J29	Zone3	4*10-Pin, PCI-E 4X channel, Fabric Port 1
	J31	Zone3	8*10-Pin, 3 PCI-E 4X channels, Fabric Port 3

Table 3-2 Positions and Description of the Connectors of the ATCA-7350 (continued)

Location	REFDES	Description	Details
Face Plate Connectors	J19/J40	Drive Bay 1/0	29-Pin, SAS Connector
	J14	USB	8-Pin, Dual USB port connector
	J22	COM	8-Pin, RJ45 Serial port connector
	J44	SAS Connector	16-Pin, InfiniBand receptacle
On-Board Memory Module Connectors	J25/J39/J27/J28	FBD Connectors	240-Pin, Fully buffered DIMM slots

3.4.1 Backplane Connectors

3.4.1.1 Zone1 (P10) Power connector

The definition of the Zone 1 (P10) connector complies with PIGMIG 3.0.

3.4.1.2 Zone2 Data Transport ZD connector

The definition of the Zone 2 connector is a subset of that defined in PIGMIG3.0. The ATCA-7350 supports the update channel interface on P20, as well as the Base interface and Fabric interface on P23 only.

The ATCA-7350 supports one Update channel connecting to the redundant slot. This channel is on the P20 connector, which is Port 0 defined in PICMIG3.0. PICMIG3.0 defines five Update ports in total. The other four ports are reserved. Reserved ports are terminated.

The connector pin assignments are described in the table as below with signals having the following naming convention: UP(m)Tx/ Rx p, where:

- Tx/Rx = transmit/receive
- m = Channel designator (1-4)
- p = polarity (+,-)

Table 3-3 J20/P20 Connector Pin Assignments for ATCA-7350

Pin	Interface Designation	A	B	C	D	E	F	G	H
1	CLKs	NC.	NC.	NC.	NC.	NC.	NC.	NC.	NC.
2	Update Channel	NC.	NC.	Term. UP(4)Rx+	Term. UP(4)Rx-	NC.	NC.	NC.	NC.
3		NC.	NC.	Term. UP(2)Rx+	Term. UP(2)Rx-	NC.	NC.	Term. UP(3)Rx+	Term. UP(3)Rx-
4		UP(0)Tx+	UP(0)Tx-	UP(0)Rx+	UP(0)Rx-	NC.	NC.	Term. UP(1)Rx+	Term. UP(1)Rx-
5	Fabric Channels 15-13 (Unused.)	NC.	NC.	NC.	NC.	NC.	NC.	NC.	NC.
6		NC.	NC.	NC.	NC.	NC.	NC.	NC.	NC.
7		NC.	NC.	NC.	NC.	NC.	NC.	NC.	NC.
8		NC.	NC.	NC.	NC.	NC.	NC.	NC.	NC.
9		NC.	NC.	NC.	NC.	NC.	NC.	NC.	NC.
10		NC.	NC.	NC.	NC.	NC.	NC.	NC.	NC.

All the tx/rx signals are as seen from ATCA-7350 side.

The two Fabric interface channels and two Base interface channels supported by the ATCA-7350 are on the P23 of Zone 2.

Table 3-4 shows the positions of Fabric Channel 1 and Channel 2, Base Channel 1 and Channel 2 on the P23.

The 10/100/1000 BASE-T data signals used in the Base Interface have the following conventions:

BI(m)_D[x]p where:

- x = differential pair (A-D)
- m = Logical Slot number (1-2)
- p = polarity (+, -)

The data signals used in the Fabric Interface have the following conventions:

F(m)Tx/Rx[n]p where:

- Tx/Rx = transmit/receive
- m = Channel designator (1-2)
- n = Port number (0-3)
- p = polarity (+, -)

Table 3-4 J23/P23 Connector Pin Assignments for ATCA-7350

Pin	Interface Designation	A	B	C	D	E	F	G	H
1	Fabric Channel 2	F(2)Tx2+	F(2)Tx2-	F(2)Rx2+	F(2)Rx2-	F(2)Tx3+	F(2)Tx3-	F(2)Rx3+	F(2)Rx3-
2		F(2)Tx0+	F(2)Tx0-	F(2)Rx0+	F(2)Rx0-	F(2)Tx1+	F(2)Tx1-	F(2)Rx1+	F(2)Rx1-
3	Fabric Channel 1	F(1)Tx2+	F(1)Tx2-	F(1)Rx2+	F(1)Rx2-	F(1)Tx3+	F(1)Tx3-	F(1)Rx3+	F(1)Rx3-
4		F(1)Tx0+	F(1)Tx0-	F(1)Rx0+	F(1)Rx0-	F(1)Tx1+	F(1)Tx1-	F(1)Rx1+	F(1)Rx1-
5	Base Channel 1	BI(1)_DA + (Tx1+)	BI(1)_DA - (Tx1-)	BI(1)_DB + (Rx1+)	BI(1)_DB - (Rx1-)	BI(1)_DC +	BI(1)_DC-	BI(1)_DD +	BI(1)_DD -
6	Base Channel 2	BI(2)_DA + (Tx2+)	BI(2)_DA - (Tx2-)	BI(2)_DB + (Rx2+)	BI(2)_DB - (Rx2-)	BI(2)_DC +	BI(2)_DC-	BI(2)_DD +	BI(2)_DD -

Table 3-4 J23/P23 Connector Pin Assignments for ATCA-7350 (continued)

Pin	Interface Designation	A	B	C	D	E	F	G	H
7	Unused	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
8		Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
9		Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
10		Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved

All the tx/rx signals are defined from ATCA-7350 side.

3.4.1.3 Zone 3 Connectors

Zone 3 is composed of three connectors, J15, J29, and J31. The three connectors are used to connect RTMs with ATCA-7350s. Zone 3 defines the following signals:

- USB (USB)
- VGA
- IPMC SMBus
- Power (VCC 12VDC, VSBY 5V5)
- PCI-E Channels
- General control signals (RTM PRESENT, RTM RST, LEDs)
- ATCA-7350 works with RTM-ATCA-7150
Fabric Channel Ports Reserved
- ATCA-7350 works with RTM-ATCA-7350
Fabric Channel Port 0, Port 1, Port 2, Port 3 (XAUI)

J15 uses a common 2mm HM connector. J29 uses a half-height ZD connector. J31 uses a ZD connector.

The following table shows the J15 pinout. PinA1 on the server blade side is on the top of the connector while the server blade is placed top side upwards and the face plate is left.

RTM_EN0_ and RTM_EN_ are signals that indicate the RTM is firmly inserted.

Table 3-5 J15 Pinout

HM	A	B	C	D	E
1	VSB5V	RTM_EN0	GND	RTM_OOSR_	RTM_HEALTHY_G_
2	VSB5V	RTM_HOTSPWAP_	GND	RTM_HEALTHY_R	RTM_OOSY_
3	+12V	RTM_TOP_EJECTOR_	GND	RTM_SDA	RTM_SCL
4	+12V	RTM_EPROM_WE	GND	VGA_RED	CPLD_RTM_TDI
5	+12V	RTM_BOT_EJECTOR_	GND	VGA_BLUE	RTM_JTAG_TDO
6	+12V	RTM_KBCLK	GND	VGA_GREEN	CPLD_RTM_TCK
7	+12V	RTM_MS DAT	GND	VGA_HS	CPLD_RTM_TMS
8	+12V	RTM_MS CLK	GND	VGA_VS	CPLD_RTM_TRST
9	+12V	RTM_KBDAT	GND	VGA_DDCCLK	RTM_PWR_GOOD
10	+12V	RTM_USB_P	GND	VGA_DDCDAT	RTM_LM80_INT_
11	+12V	RTM_USB_N	GND	RTM_SBY_RST	RTM_EN_

J29 is used for port1 and port2 signals of the Fabric interface, and the PCIE signals from MCH.

Table 3-6 J29 Pinout

ZD1	A	B		C	D	
1	RTM_SYSLED_G_	RESERVED	GND	RTM_SYSLED_R_	RESERVED	GND
2	RTM_FC2_TX2_H	RTM_FC2_TX2_L	GND	RTM_FC1_TX2_H	RTM_FC1_TX2_L	GND
3	RTM_FC2_RX2_H	RTM_FC2_RX2_L	GND	RTM_FC1_RX2_H	RTM_FC1_RX2_L	GND
4	RTM_FC2_TX1_H	RTM_FC2_TX1_L	GND	RTM_FC1_TX1_H	RTM_FC1_TX1_L	GND
5	RTM_FC2_RX1_H	RTM_FC2_RX1_L	GND	RTM_FC1_RX1_H	RTM_FC1_RX1_L	GND
6	RTM_PE7_PRSENT_R_	RTM_PE7_RST_	GND	MCH_EXP7_RXP3	MCH_EXP7_RXN3	GND
7	RTM_EXP7_RXP3	RTM_EXP7_RXN3	GND	MCH_EXP7_RXP2	MCH_EXP7_RXN2	GND
8	RTM_EXP7_RXP2	RTM_EXP7_RXN2	GND	MCH_EXP7_RXP1	MCH_EXP7_RXN1	GND
9	RTM_EXP7_RXP1	RTM_EXP7_RXN1	GND	MCH_EXP7_RXP0	MCH_EXP7_RXN0	GND

Table 3-6 J29 Pinout (continued)

ZD1	A	B		C	D	
10	RTM_EXP7_RXP0	RTM_EXP7_RXN0	GND	RTM_PCIE7_CLK_P	RTM_PCIE7_CLK_N	GND

Table 3-7 J31 Pinout

ZD2	A	B		C	D		E	F		G	H	
1	RTM_PE_SD A	RTM_PE_SCL	GND	MCH_EXP6_RX XP1	MCH_EXP6_RX N1	GND	RTM_EXP6_RX P3	RTM_EXP6_RX RXN3	GND	MCH_EXP6_RX P3	MCH_EXP6_RX N3	GND
2	RTM_EXP6_RXP1	RTM_EXP6_RXN1	GND	MCH_EXP6_RX XP0	MCH_EXP6_RX N0	GND	RTM_EXP6_RX P2	RTM_EXP6_RX RXN2	GND	MCH_EXP6_RX P2	MCH_EXP6_RX N2	GND
3	RTM_EXP6_RXP0	RTM_EXP6_RXN0	GND	RTM_PCIE6_CLK_P	RTM_PCIE6_CLK_N	GND	RTM_EXP5_RX P3	RTM_EXP5_RX RXN3	GND	MCH_EXP5_RX P3	MCH_EXP5_RX N3	GND
4	RTM_EXP5_RXP1	RTM_EXP5_RXN1	GND	MCH_EXP5_RX XP1	MCH_EXP5_RX N1	GND	RTM_EXP5_RX P2	RTM_EXP5_RX RXN2	GND	MCH_EXP5_RX P2	MCH_EXP5_RX N2	GND
5	RTM_EXP5_RXP0	RTM_EXP5_RXN0	GND	MCH_EXP5_RX XP0	MCH_EXP5_RX N0	GND	RTM_PCIE4_CLK_P	RTM_PCIE4_CLK_N	GND	RTM_PCIE5_CLK_P	RTM_PCIE5_CLK_N	GND
6	RTM_EXP4_RXP1	RTM_EXP4_RXN1	GND	MCH_EXP4_RX XP1	MCH_EXP4_RX N1	GND	RTM_EXP4_RX P3	RTM_EXP4_RX RXN3	GND	MCH_EXP4_RX P3	MCH_EXP4_RX N3	GND
7	RTM_EXP4_RXP0	RTM_EXP4_RXN0	GND	MCH_EXP4_RX XP0	MCH_EXP4_RX N0	GND	RTM_EXP4_RX P2	RTM_EXP4_RX RXN2	GND	MCH_EXP4_RX P2	MCH_EXP4_RX N2	GND
8	RTM_PE6_P RSNT_R	RTM_PE5_P RSNT_R	GND	RTM_PCIE4_WAKE_P	RTM_PCIE5_WAKE_P	GND	RTM_PE6_RST_P	RTM_PE5_RST_P	GND	RTM_PCIE4_WAKE_P	RTM_PCIE5_WAKE_P	GND
9	RTM_FC2_TX3_H	RTM_FC2_TX3_L	GND	RTM_FC1_TX3_H	RTM_FC1_TX3_L	GND	RTM_FC2_TX0_H	RTM_FC2_TX0_L	GND	RTM_FC1_TX0_H	RTM_FC1_TX0_L	GND

Table 3-7 J31 Pinout (continued)

ZD2	A	B		C	D		E	F		G	H	
10	RTM_ FC2_R X3_H	RTM_FC 2_RX3_ L	GN D	RTM_F C1_RX 3_H	RTM_F C1_RX3 _L	GN D	RTM_F C2_RX0 _H	RTM_ FC2_R X0_L	GN D	RTM_F C1_RX0 _H	RTM_F C1_RX0 _L	GND

3.4.2 Face Plate (ATCA-7350) Connectors

3.4.2.1 SAS HDDs

The ATCA-7350 supports two hot-swappable 2.5-inch SFF SAS/SATA HDD and supports hardware RAID 0/1.

For details on how to install, remove, and install a hard disk, refer to the ATCA-7X50-HDDx-SAS/SATA Installation Information and section RAID Operations and Disk Hot-Swap.

The SAS Controller of the ATCA-7350 supports the Serial Attached SCSI Standard, Version 1.0/Version 1.1. The hardware design of the ATCA-7350 supports the Serial ATA Specification Version 1.0a and the SATA II.

The ATCA-7350 utilizes two SAS internal cable receptacle connectors. The connector provides contact for the power pins and only the primary physical link. The pinout and pin assignment information are as follow:

Figure 3-5 PINOUT of SAS Connector

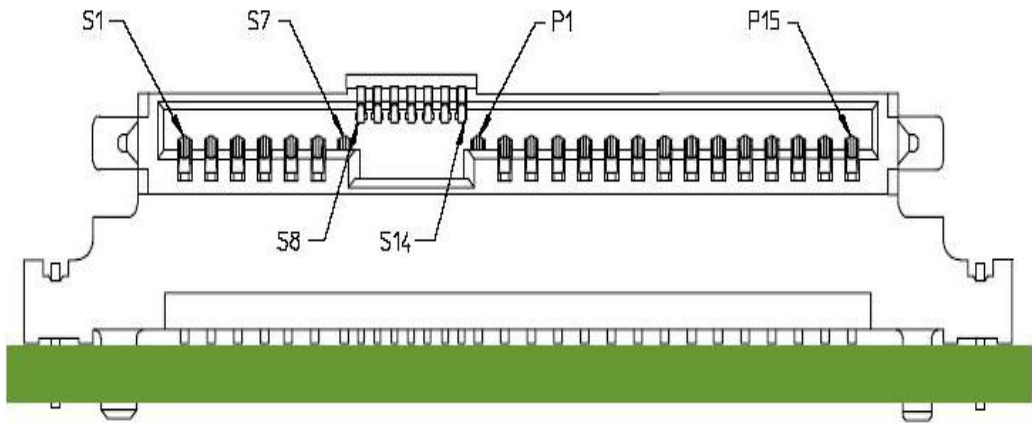


Table 3-8 SAS Connector Pin Assignments

Segment	PIN	Name	Description
Primary Signals	S1	GROUND	Connected to the logic Ground of ATCA-7350
	S2	TP+	Primary Transmitting Pair. Driven by SAS controller of ATCA-7350.
	S3	TP-	
	S4	GROUND	Connected to the logic Ground of ATCA-7350
	S5	RP-	Primary Receiving Pair. Driven by the target device.
	S6	RP+	
	S7	GROUND	Connected to the logic Ground of ATCA-7350

Table 3-8 SAS Connector Pin Assignments (continued)

Segment	PIN	Name	Description
Secondary Signals	S8	GROUND	Connected to the logic Ground of ATCA-7350
	S9	TS+	Secondary Transmitting Pair. Not connected on ATCA-7350.
	S10	TS-	
	S11	GROUND	Connected to the logic Ground of ATCA-7350
	S12	RS-	Secondary Receiving Pair. Not connected on ATCA-7350.
	S13	RS+	
	S14	GROUND	Connected to the logic Ground of ATCA-7350
	P1	V33	3.3V Power Supply. Connected to ATCA-7350 3.3V power plane.
	P2	V33	
	P3	V33, precharge	
	P4	GROUND	Connected to the logic Ground of ATCA-7350
	P5	GROUND	
	P6	GROUND	
	P7	V5, precharge	5V Power Supply. Connected to ATCA-7350's 5V power plane through the slow start control circuit.
	P8	V5	
	P9	V5	
	P10	GROUND	Connected to the logic Ground of ATCA-7350
	P11	READY LED	Not used on ATCA-7350, No connection.
	P12	GROUND	Connected to the logic Ground of ATCA-7350
	P13	V12, precharge	12V Power Supply. Connected to ATCA-7350's 12V power plane through the slow start control circuit.
	P14	V12	
	P15	V12	

3.4.2.2 SAS Ports

The front panel of ATCA-7350 provides two 3.0 Gbit/s SAS connectors. The pinout and pin assignment information are as follows:

Figure 3-6 Pinout of SAS Connector

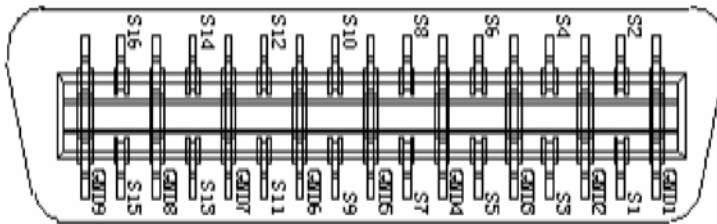


Table 3-9 SAS Connector Pin Assignments

Segment	PIN	Name	Description
Signals	S1	RX2+	Receive Positive differential data of sas1064 port 2
	S2	RX2-	Receive Negative differential data of sas1064 port 2
	S3	RX3+	Receive Positive differential data of sas1064 port 3
	S4	RX3-	Receive Negative differential data of sas1064 port 3
	S5	NC	NO CONNECT
	S6	NC	NO CONNECT
	S7	NC	NO CONNECT
	S8	NC	NO CONNECT
	S9	NC	NO CONNECT
	S10	NC	NO CONNECT
	S11	NC	NO CONNECT
	S12	NC	NO CONNECT
	S13	TX3-	Transmit Negative differential data of sas1064 port 3
	S14	TX3+	Transmit Positive differential data of sas1064 port 3
	S15	TX2-	Transmit Negative differential data of sas1064 port 2
	S16	TX2+	Transmit Positive differential data of sas1064 port 2

3.4.2.3 USB Ports

ATCA-7350 has a dual port USB Connector on the face plate. USB ports on the front port are compliant to the USB 2.0 Specification and can run at High speed mode. See the USB Port Pin Assignment table for the pinout information.

Table 3-10 USB Connector Pin Assignments

Pin	Pin Name	Description
1	+5V	+5V Power Supply, Max 500mA each port.
2	Data-	Differential Data transmitting pair.
3	Data+	

Table 3-10 USB Connector Pin Assignments (continued)

Pin	Pin Name	Description
4	GROUND	Ground, connected to the logic GND of ATCA-7350.

3.4.2.4 Serial Port

ATCA-7350 provides a signal serial port using a RJ-45 style shielded connector. The serial port can be switched to system (host processor) serial port or IPMC control console serial port via IPMI command. See *ATCA-7350: Control via IPMI Programmer's Reference* for details.

Table 3-11 Serial Port Connector Pin Assignments

Pin	Pin Name	Description
1	NC.	Not connected.
2	NC.	Not connected.
3	TXD	Data transmitting signal.
4	GROUND	Ground, connected to the logic GND of ATCA-7350.
5	GROUND	Ground, connected to the logic GND of ATCA-7350.
6	RXD	Data receiving signal.
7	NC.	Not connected.
8	NC.	Not connected.

NOTICE

Pay Attention to Important Information

By default the payload console is selected (9600 baud). However as long as the payload is not powered, the IPMC console is visible (115200 baud) always. With powering the payload the IPMC automatically selects the payload serial console if the serial port selection is not modified.

The serial port selection can be modified by executing the OEM IPMI command "Set Serial Output" In case of the IPMC is selected with such command, the IPMC serial console is selected also when the payload is powered.

Be aware that this selection is persistent.

3.4.3 Onboard Jumpers



All the jumpers are only for debugging and manufacturing only. They should not be changed by the customers.

3.5 LEDs

The ATCA-7350 face plate provides the following LEDs:

- Out of service (OOS) LED
- In Service (IS) LED
- Attention (ATN) LED
- H/S LED
- HD LED

You can monitor the LEDs to diagnose the current status of the ATCA-7350.

Table 3-12 lists the LEDs on the ATCA-7350 face plate.

Table 3-12 LEDs on the ATCA-7350 Face Plate

LED	Color	Meaning	Description
Out Of Service (OOS)	Red or amber	Service status LED	The OOS LED is set to on (red) when the payload processor starts running. Payload Management software is responsible for controlling the OOS LED.
In Service (IS)	Red, green or amber	Health LED	The IS LED is off when the payload processor starts running. Payload Management software is responsible for controlling the IS LED.

Table 3-12 LEDs on the ATCA-7350 Face Plate (continued)

LED	Color	Meaning	Description
Attention (ATN)	Amber	User LED	The ATN LED is set to off when the payload processor starts running. Payload Management software is responsible for controlling the ATN LED.
HOTSWAP	Blue	Hot swap LED	● Off: The ATCA-7350 is in activated state. ● On: The ATCA-7350 is inserted, but in deactivated state or not powered on. ● Blinking at the long blink rate¹: The ATCA-7350 is requesting for activation. ● Blinking at the short blink rate²: The ATCA-7350 is requesting for deactivation.
HD	Green	Hard disk running LED	● Blinking: The hard disk reads or writes data. ● Off: The HD LED is off in other situations.

1. Blinking at the long blink rate means that the LED is on for 900 ms and then off for 100 ms alternatively

2. Blinking at the short blink rate means that the LED is on for 100 ms and then off for 900 ms alternatively.

Functional Description

4.1 Overview

The ATCA-7350 is designed for High Availability, Switched Network Computing. Bulk storage for the system is connected through optional dual Fiber Channel (FC) or via external SAS connection.

The specifications and functions of the ATCA-7350 are listed below.

4.1.1 Processor

One or two Intel® Quad-Core LV Xeon™ 5408 (2.13 GHz) with 12MB L2 cache per processor

4.1.2 Chipset

- Intel® 5000P/6321 ESB
- 1066MHz FSB

4.1.3 Memory

Up to 32 GB FB-DIMM DDR2-533/667 via four DIMM sockets

4.1.4 I/O Features (with RTM-ATCA-7350)

- Dual 10/100/1000 Mbps Ethernet (Base interface, with PXE function supporting)
- Dual 1000 Mbps Ethernet (Fabric interface)
- One 1000 Mbps Ethernet (Update channel interface)
- E-keying on Fabric channel and Update channel
- PICMG 3.1 Option 9 Fabric Interface Support
- Two RTM IO module slots for GE daughter cards or FC daughter card

4.1.5 I/O Features (with RTM-ATCA-7150)

- Dual 10/100/1000 Mbps Ethernet (Base interface, with PXE function supporting)
- Dual 1000 Mbps Ethernet (Fabric interface)

- One 1000 Mbps Ethernet (Update channel interface)
- E-keying on Fabric channel and Update channel
- Four RTM IO module slots for GE daughter cards or FC daughter cards

4.1.6 Front Panel

- 2 x USB2.0
- One serial port (RJ-45)
- Two SAS ports (SAS 4x receptacle connector)
- One reset button

4.1.7 Onboard Storage

- Two onboard hot-swappable 2.5-inch SFF SAS/SATA HDDs, Supporting hardware RAID 0/1
- On-board USB flash chips, 1GB capacity

4.1.8 Management

- IPMC, dual firmware image, Dual IPMBs
- SOL

4.1.9 Form Factor

- 8 U x 280 mm x 1.2 inch pitch
- Single slot

4.1.10 Power

- Type: 150 W
- Max: 200 W

4.1.11 Environment

- Long term ambient temperature: 5°C to +40°C
- Short term ambient temperature: -5°C to +55°C
- Long term ambient humidity: 5%RH to 85%RH
- Short term ambient humidity: 5%RH to 90%RH

4.1.12 Target Certifications

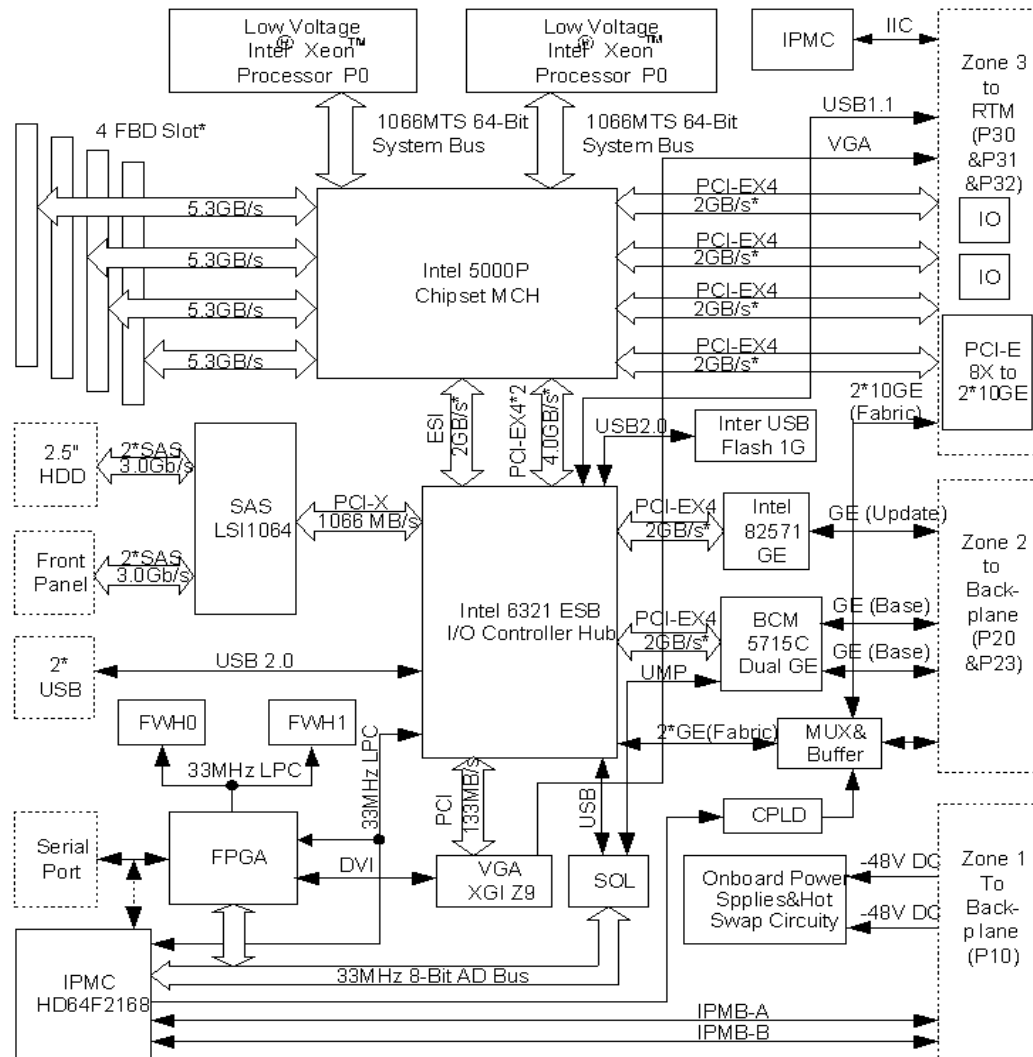
UL / CSA, CB, TUV-Mark

4.1.13 Design Standard

- PICMG 3.0 R2.0
- IPMI 2.0

4.2 Block Diagram

Figure 4-1 *Block Diagram of ATCA-7350*



* Aggregated bandwidth

4.3 Processors

The ATCA-7350 supports two Low Voltage Intel® Quad-Core LV Xeon™ 5408 processors. Each processor runs at 2.13 GHz clock frequency and features a 12MB L2 cache.

The processors with quad cores each provide exceptional performance for applications running on advanced operating systems such as Windows, Linux and UNIX.

The Quad-Core Intel® Xeon® processors are 64-bit server processors utilizing four Intel Core™ micro architecture cores. They support Intel® 64 architecture as an enhancement to Intel's IA-32 architecture. This enhancement allows the two processors to execute operating systems and applications written to take advantage of the 64-bit extension technology.

4.3.1 Features

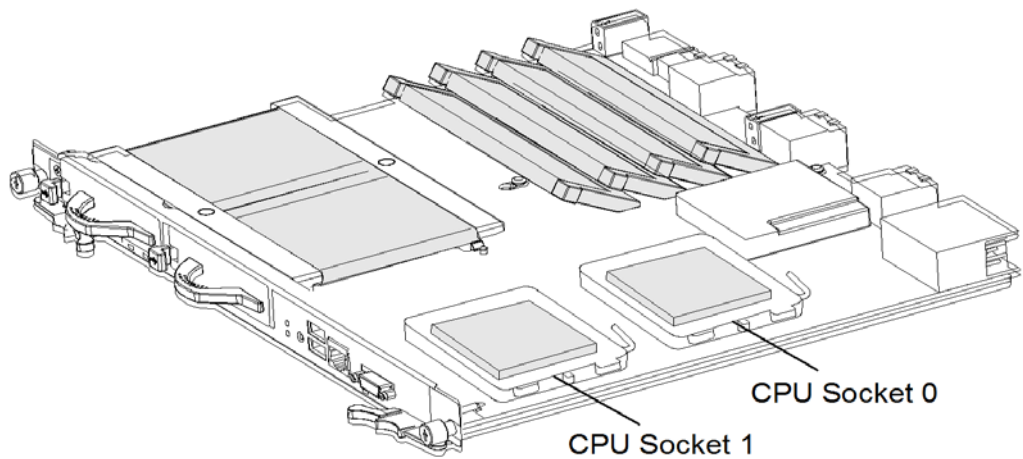
The processors provide the following features.

- Quad-Core processing with Intel® Core™ microarchitecture
- Performance optimized version available
- 32-KB Level 1 instruction and 32-KB Level 1 data cache per core
- 12MB L2 Cache
- Intel® Advanced Smart Cache
- 1066MHz system bus with Dual Independent Bus architecture
- Intel® Extended Memory 64 Technology (Intel® EM64T)
- Intel® Wide Dynamic Execution
- Intel® Advanced Digital Media Boost
- Intel® Smart Memory Access
- Thermal Monitor 1 (TM1)
- Thermal Monitor 2 (TM2)
- Platform Environment Control Interface (PECI) to monitor Digital Thermal Sensors

4.3.2 Processor Locations

The ATCA-7350 can be configured with two central processing units (CPUs) or a single CPU. When only one CPU is configured, the CPU must be installed in CPU socket 0. The positions of CPU socket 0 and CPU socket 1 are shown in [Figure 4-2](#).

Figure 4-2 Processor Locations



4.4 Chipset

4.4.1 Memory Controller Hub

The Memory Controller Hub connects the processors to the main memory and the payload I/O of the ATCA-7350. It features:

- Quad-pumped 1066 MHz FSB
- Point to point DIB processor system bus interface
- Peak address generation rate of 533 Million Addresses/second

- 64-bit data buses with peak bandwidths of 8.5 GB/s (1066MT/s)
- 36-bit host addressing, decoding up to 64 GB of the processor's memory address space
- Four channels of Fully Buffered DIMM (FB-DIMM) memory
- 4.25 GB/s read bandwidth each FB-DIMM channel for DDR2 533 FB-DIMM memory and 5.3GB/s for DDR2 667FB-DIMM memory
- 8.5 GB/s write memory bandwidth for four FB-DIMM channels and 10.7 GB/s for DDR2 667FB-DIMM memory
- 6 x4 standard PCI Express ports and an additional x4 ESI port for Intel® 631xESB/632xESB I/O Controller Hub
- ESI chip-to-chip connection to the Intel 6321ESB I/O Controller Hub

4.4.2 Enterprise South Bridge

The Intel® 631xESB/632xESB I/O Controller Hub provides extensive I/O support.

Functions and capabilities include:

- Enterprise South Bridge Interface (ESI) and PCI Express X8 upstream ports to Memory Controller Hub (MCH)
- PCI Express Specification, Revision 1.0a-compliant
- PCI Protocol Addendum and PCI Electrical and Mechanical Addendum to the PCI Local Bus Specification, Revision 2.0a-compliant
- PCI Local Bus Specification, Revision 2.3-compliant with support for 33 MHz PCI operations (supports up to seven Req/Gnt pairs)
- ACPI power management logic support
- Enhanced DMA controller, interrupt controller, and timer functions
- USB host interface supporting UHCI and EHCI 2.0 host controller
- PICMG-compliant Serdes backplane Gigabit Ethernet support
- System Management Bus (SMBus) Specification, Version 2.0-compliant with additional support for I2C devices

- Low Pin Count (LPC) interface
- Firmware Hub (FWH) interface support

4.5 Memory

The ATCA-7350 supports four DDR2 533/677 Fully Buffered DIMMs (FBD).

The ATCA-7350 memory controller hub complies with the FB-DIMM specification definition of a host.

The ATCA-7350 has four FBD slots (J25, J39, J27, and J28) for up to four FBDs. Slots J25, J39, J27, and J28 correspond to Channel 0, Channel 1, Channel 2, and Channel 3 of the memory controller hub (MCH) respectively.

The FBD channels of the MCH reside on two branches. FBD Channel 0 and Channel 1 reside on branch 0, while FBD Channel 2 and Channel 3 reside on branch 1.

The ATCA-7350 can be configured with one, two, or four DIMMs. The positions for installing the DIMMs are shown in [Table 2-6](#). [Figure 2-3](#) shows the DIMM slots positions.



Limited by the physical dimensions of the blade, FBDs installed on ATCA-7350 must not be higher than 30.5mm and must not be thicker than 6.6mm.

FB-DIMMs with quad rank architecture are not supported by the memory controller and can not be installed on the ATCA-7350.

4.6 I/O

4.6.1 Keyboard and Mouse

The ATCA-7350 supports USB keyboard and mouse and also PS2 keyboard and mouse via a converter cable. The USB port connector for the keyboard and mouse is on the front panel of the RTM.

4.6.2 Serial Port

The ATCA-7350 uses a FPGA to implement system (host processor) serial port controller.

The serial port on the front panel of ATCA-7350 can be switched to system (host processor) serial port or IPMC console serial port by IPMI command (see command "Set Serial Output" in the *ATCA-7350: Control via IPMI Programmer's Reference*).

The system serial port is selected by default, and can be switched to IPMC serial port by IPMI command.

The serial port parameter can be set via BIOS SETUP UTILITY, proceed as follows:

1. To set the Serial Port Mode
The Bits per second can be set to 115200, 57600, 38400, 19200 and 09600. The default baud rate setting of the system serial port is 09600bps, also set Data bits to 8, Parity to None, Stop bits to 1.
2. Set Flow Control to None
3. Set Terminal Type to ANSI



- Flow Control must be set to None and Terminal Type must be set to ANSI in BIOS Setup Utility.
- The default baud rate setting of the IPMC serial port is 115200bps, if the serial port on the front panel of ATCA-7350 is switched to IPMC serial port, pay attention to the baud rate.

4.6.3 Real-Time Clock

The Real Time Clock (RTC) of the ATCA-7350 is generated by the circuit powered by the battery in the ESB. The clock source is a 32.768 KHz crystal resonator. If there is no battery, the RTC is powered by the SMM through the IPMB.

The parameters of the crystal resonator are as follows:

- Frequency tolerance @ 25 °C: $\pm 20\text{ppm}$
- Frequency stability: maximum of $-0.04\text{ppm}/_{\text{ }^{\circ}\text{C}}^2$
- Aging (1st year @ 25 °C): $\pm 3\text{ppm}$

4.6.4 Gigabit Ethernet (ATCA-7350 with RTM-ATCA-7350)

The ATCA-7350 with RTM-ATCA-7350 provide the following 1/10 Gigabit Ethernet (GE) interfaces:

- Two Base interface GE (10/100/1000 BASE-T) on ATCA-7350.
- The two GE Base interfaces support PXE function. PXE function can be enabled or disabled through the BIOS SETUP UTILITY (Disabled by default), more details see section 6.3.8 PXE Function Configuration Submenu, The MAC address needed during the PXE network booting process are shown in this BIOS menu.
- Two Fabric interface 10GE on ATCA-7350 (requires RTM-ATCA-7350 to be installed).
- One Update Channel interface GE (1000Base-SX/LX) on ATCA-7350.
- Two customized 4 Lane PCI-E buses in RTM-ATCA-7350, providing 2, 4 external GE ports with 1, 2 external GE daughter cards configured.

Please refer to *RTM-ATCA-7350 Installation and Use* manual.

4.6.5 Gigabit Ethernet (ATCA-7350 with RTM-ATCA-7150)

The ATCA-7350 with RTM-ATCA-7150 provide the following Gigabit Ethernet (GE) interfaces:

- Two Base interface GE (10/100/1000 BASE-T) on ATCA-7350.
- The two GE Base interfaces support PXE function. PXE function can be enabled or disabled through the BIOS SETUP UTILITY (Disabled by default), more details see section 6.3.8 PXE Function Configuration Submenu, The MAC address needed during the PXE network booting process are shown in this BIOS menu.
- Two Fabric interface 1 GE on ATCA-7350.
- One Update Channel interface GE (1000Base-SX/LX) on ATCA-7350.
- Four customized 4 Lane PCI-E buses in RTM-ATCA-7150, providing 2, 4, 6, 8 external GE ports with 1, 2, 3, 4 external GE daughter card configured.

Please refer to *RTM-ATCA-7150 Installation and Use* manual.

4.6.6 Fiber Channel (ATCA-7350 with RTM-ATCA-7350)

The ATCA-7350 with RTM-ATCA-7350 can provide two external Fiber channel ports through the RTM, with one external FC daughter card configured (installed on connectors J1 of RTM-ATCA-7350).

Please refer to *RTM-ATCA-7350 Installation and Use* manual.

4.6.7 Fiber Channel (ATCA-7350 with RTM-ATCA-7150)

The ATCA-7350 with RTM-ATCA-7150 can provide two or four external Fiber channel ports through the RTM, with one or two external FC daughter cards configured (installed on connectors J2, J4 of RTM-ATCA-7150).

Please refer to *RTM-ATCA-7150 Installation and Use* manual.

4.6.8 SAS HDD

The ATCA-7350 supports two hot-swappable RAID1 2.5 inch SAS/SATA HDD. The SAS controller is SAS1064 chip of LSI for providing 3.0 G SAS interfaces.

4.6.9 SAS Port

The panel of the ATCA-7350 provides two external SAS port (3.0 Gbit/s) for connecting to JBOD.

- Provides two fully independent phys.
- Support 3.0 Gbit/s and 1.5 Gbit/s SAS data transfers for each phy.
- Support SSP to enable communication with other SAS devices.
- Support SMP to communicate topology management information.
- Provides a serial, point-to-point, enterprise-level storage interface.
- Simplifies cabling interface that supports up to 128 devices through multiple expanders (if available in external storage array).
- Supports wide ports consisting of two phys.
- Transfers data using SCSI information units.

4.6.10 USB Port

The ATCA-7350 provides three external USB interfaces. The two USB interface on the ATCA-7350 panel complies with USB2.0 and can work in the High Speed mode. The other one on the panel of the RTM complies with USB1.1 and can be used to connect such devices as mouse and keyboard.

4.7 BIOS BOOT Banks

The ATCA-7350 supports two 8 Mbit (1 MByte) BIOS flash ROMs, i.e. BIOS bank A and BIOS bank B. The blade supports redundant BIOS mechanism and the IPMC controls active and standby modes to improve system reliability.

The ATCA-7350 boots up from BIOS bank A i.e. flash ROM by default.

4.7.1 Redundant BIOS

The ATCA-7350 supports the dual-BIOS backup function. If the current BIOS fails to boot, the current BIOS is switched over to the backup BIOS automatically.

When you upgrade the BIOS through the IPMC or with an Artesyn upgrade tool, you can upgrade the currently selected BIOS bank only. To switch over the BIOS and query the current BIOS, run the commands "Set/Get System Boot Options" together with the OEM boot parameter #96 mentioned in *ATCA-7350 IPMI Users manual*.

4.8 Intelligent Platform Management Controller

4.8.1 Functions

The Intelligent Platform Management Controller (IPMC) is based on a High-speed central processing unit with an internal 16-bit architecture.

The IPMC module provides the following functions:

- IPMI 2.0 compatible
- PICMG 3.0 R2.0 compatible

- 65000 SEL entries
- Two managed FRU (including RTM) and five unmanaged FRU at best
- SDR support
- KCS interface support
- HPM.1 support
- Serial over LAN
- Dual image support
- Dual handle switch support
- Online firmware upgrade
- Provides two redundant IPMB (I2C) bus connection to backplane (Zone1).

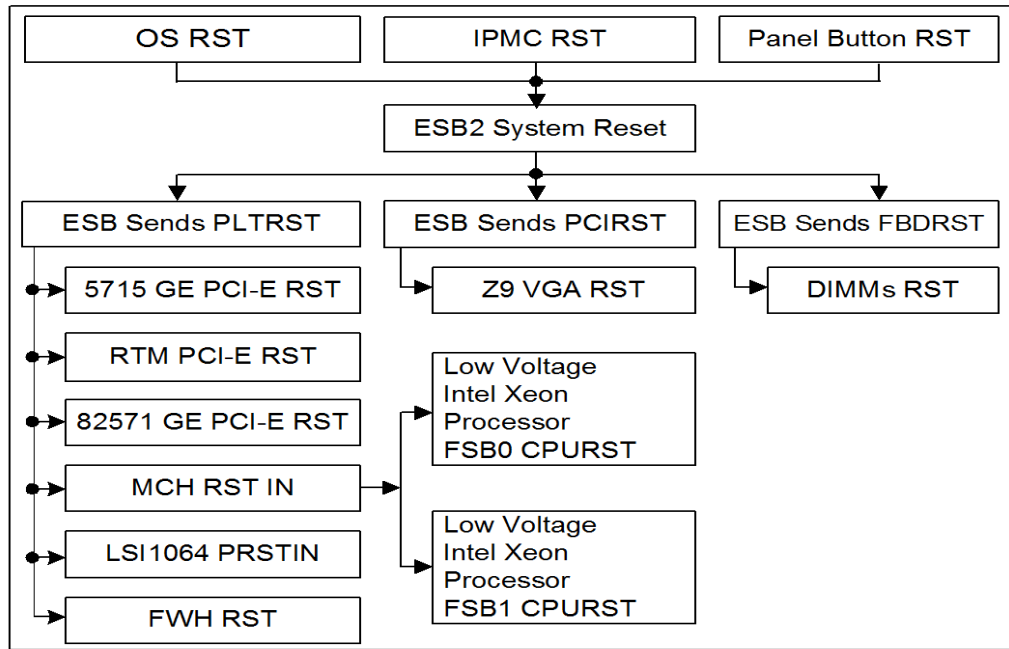
4.9 Reset Methods

The ATCA-7350 supports the following reset methods:

- System software reset
- System reset signals asserted by the IPMC software
- Reset through the front panel reset button

Figure 4-3 shows the detailed ATCA-7350 reset information.

Figure 4-3 Reset Diagram

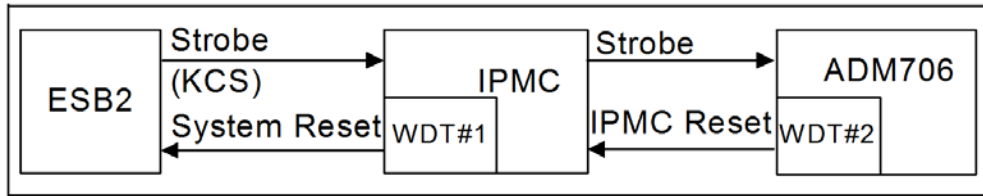


4.10 WDTs

The ATCA-7350 provides two watchdog timers (WDTs) for the host processor and IPMC of the system.

Figure 4-4 shows the relationship between the two WDTs.

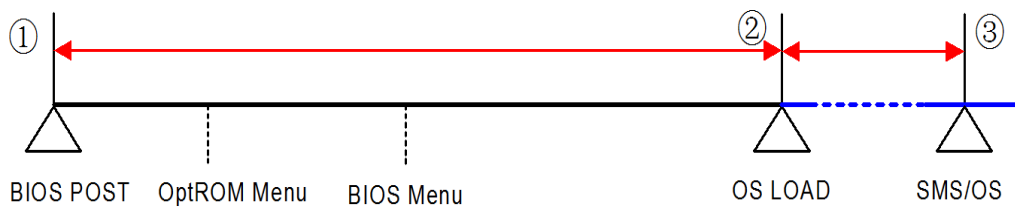
Figure 4-4 Relationship between the two WDTs



4.10.1 WDT#1

System software and host BIOS communicate with the IPMC through the keyboard controller style (KCS) interface. The host processor sends a "Reset WDT message" to the IPMC through the KCS interface. The timeout threshold of WDT#1 varies with system running status. Here, in the below figure SMS means System Management Software.

Figure 4-5 WDT operating status



The WDT#1 takes different actions in different phases, see as follows:

1. Before BIOS POST: Before moment ① as shown in Figure 4-5, the host processor does not run. The IPMC software records the time period from system reset completion to the arrival time of the first "Reset WDT message". If the "Reset WDT message" does not arrive within 40 s, the WDT times out. In this case, the IPMC sends a system reset message.
2. BIOS POST phase: the time period from ① to ② as shown in Figure 4-5. In the BIOS POST phase, the "Reset WDT message" is sent by the BIOS software of the host processor.

Note: Here, BMC means IPMC.

BMC WDT Action For POST in the Advanced setting pane in the BIOS SETUP UTILITY interface is used to enable/disable WDT in the BIOS POST phase and perform the action after the WDT times out. BMC WDT for POST phase is enabled by default setting. BMC WDT Time Out For POST is used to set the timeout threshold of the WDT in the BIOS POST phase. This threshold can be set to 2, 3, 5, 8, or 15 minutes. This threshold has a default value of 8 minutes.

3. OS LOAD phase: the time period from ② to ③ and after ③, as shown in [Figure 4-5](#). In the OS LOAD phase, the "Reset WDT message" is sent by the software running in the OS of the host processor. BMC WDT Action For OS Loader in the Advanced setting pane the BIOS SETUP UTILITY interface is used to enable/disable WDT in the OS LOAD phase and perform the action after the WDT times out. BMC WDT for OS LOAD phase is disabled by default setting. BMC WDT Time Out For OS Loader is used to set the timeout threshold of the WDT in the OS LOAD phase. This threshold can be set to 2, 3, 5, 8, or 15 minutes.

4.10.2 WDT#2

The IPMC WDT (implemented in hardware) must be strobed by the IPMC firmware. If IPMC WDT expires, it isolates the blade from the backplane IPMB buses and resets the IPMC.

The watchdog timer is set to trigger the reset of IPMC if the WDT has not be cleared for 1.6 seconds and the IPMC strobes it once 100 milliseconds.

4.11 Power Supplies

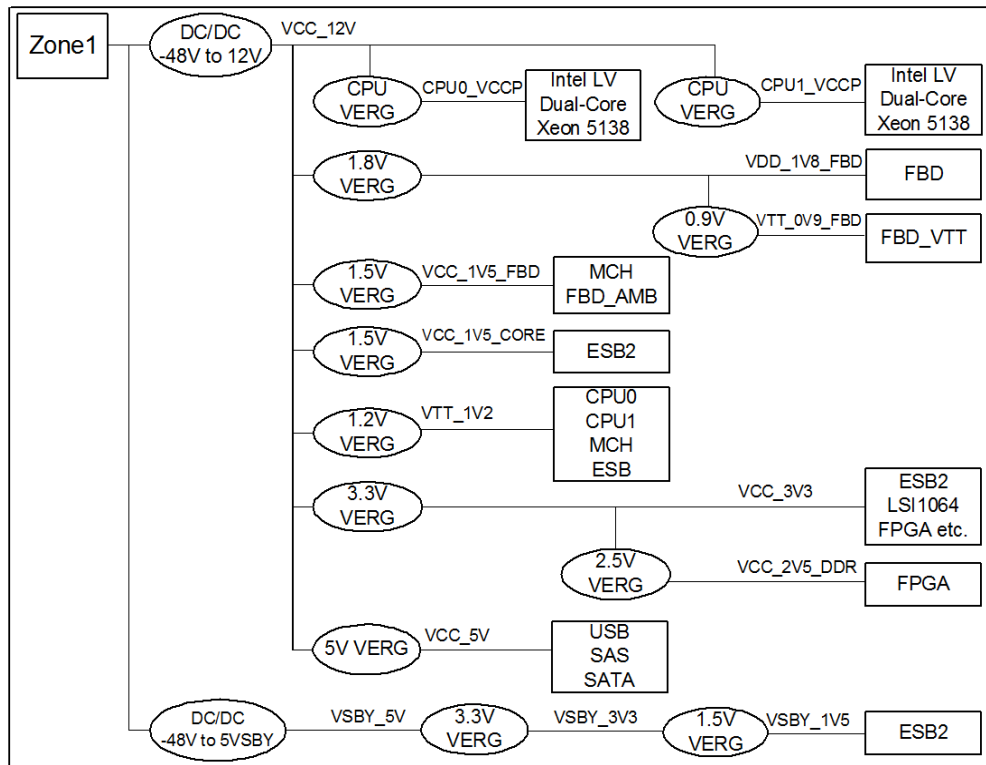
The shelf provides blades with two redundant -48 V power inputs through the Zone1 connector; If one power input is faulty, the blades can work normally. This improves system reliability.

The IPMC monitors whether the two -48 V power inputs are present. At the same time, the IPMC monitors the two shortest pins on the Zone1 connector to check that if the blade is properly inserted.

The -48 V DC power inputs supplied through the Zone1 connector are converted to the +12 V DC voltage. Then the +12 V DC voltage can be converted to the voltages required by each device on the ATCA-7350.

The power supplies of such modules as the IPMC are independent and generated through the -48 V DC to +5 V DC converter. The IPMC controls power-on and power-off of the ATCA-7350.

Figure 4-6 Power supply topology



4.12 ACPI

Table 1-9 lists the power supply states supported by the ATCA-7350 and the power supply states of key devices. The ATCA-7350 supports three sleeping states defined in ACPI, S0, S4, and S5.

Table 4-1 Power states and targeted system power

Global States	Sleeping States	Processor States	Device States
G0 - working state	S0 - working	C0 - working	D0 - working state
G1 - sleeping state	S4 - Suspend to disk. Context saved to disk	No power	D3 - no power except for wake up logic.
G2/S5	S5 - Soft off. Context not saved. Cold boot is required.	No power	D3 - no power except for wake up logic.
G3 -mechanical off DC power is disconnected from the chassis.	No power to the system.	No power	D3 - no power for wake up logic, except when provided by battery or external source.

4.13 On-Board USB Flash

The 1 GB USB flash memory is designed on the ATCA-7350, which is used to store OS programs or applications.

4.14 SOL Daughter Card

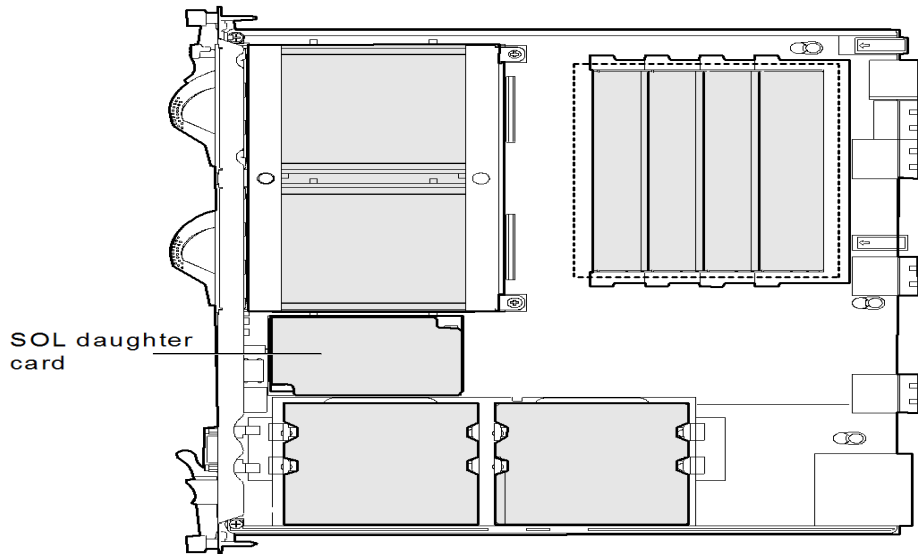
SOL daughter card provides the function of transmitting serial port data based on IPMI over LAN. The IPMC of the ATCA-7350 redirects the OS serial port data to the network through the RMCP+ protocol. You can access the system serial port of the ATCA-7350 safely.

To set and use SOL, refer to [Setting Up a Serial Over LAN Session](#) on page 104.



The serial port redirected by the SOL function is the system serial port of the ATCA-7350.

Figure 4-7 SOL Daughter Card Location (J41)



System Management

5.1 Overview

This chapter describes the feature set of the IPMI v.2.0 compliant Intelligent Platform Management Interface Controller firmware. Furthermore Sensors implemented are described. For more details about the IPMC and its command set, please see the *ATCA-7350 IPMI Users manual*.

5.2 Sensor Information

The ATCA-7350 provides different sensors to monitor various board voltages, temperatures, board states and events. The sensors available on the blade/RTM are shown in the table below:

Table 5-1 Sensors Overview

Sensor Name	Sensor Type
CPU Inlet Temp	Temperature
FBD Inlet Temp	Temperature
HD Env Temp	Temperature
CPU0 Core Rem	Temperature
CPU1 Core Rem	Temperature
+3.3V_BAT	Voltage
+3.3VCC	Voltage
+5VSB	Voltage
+12VCC	Voltage
+5VCC	Voltage
+3.3VSB	Voltage
FRU Hot Swap	Hot Swap State
IPMB Link State	IPMB Link State
-48V Power1	-48V Power1 State
-48V Power2	-48V Power2 State
CPU0 Status	CPU0 Status
CPU1 Status	CPU1 Status

Table 5-1 Sensors Overview (continued)

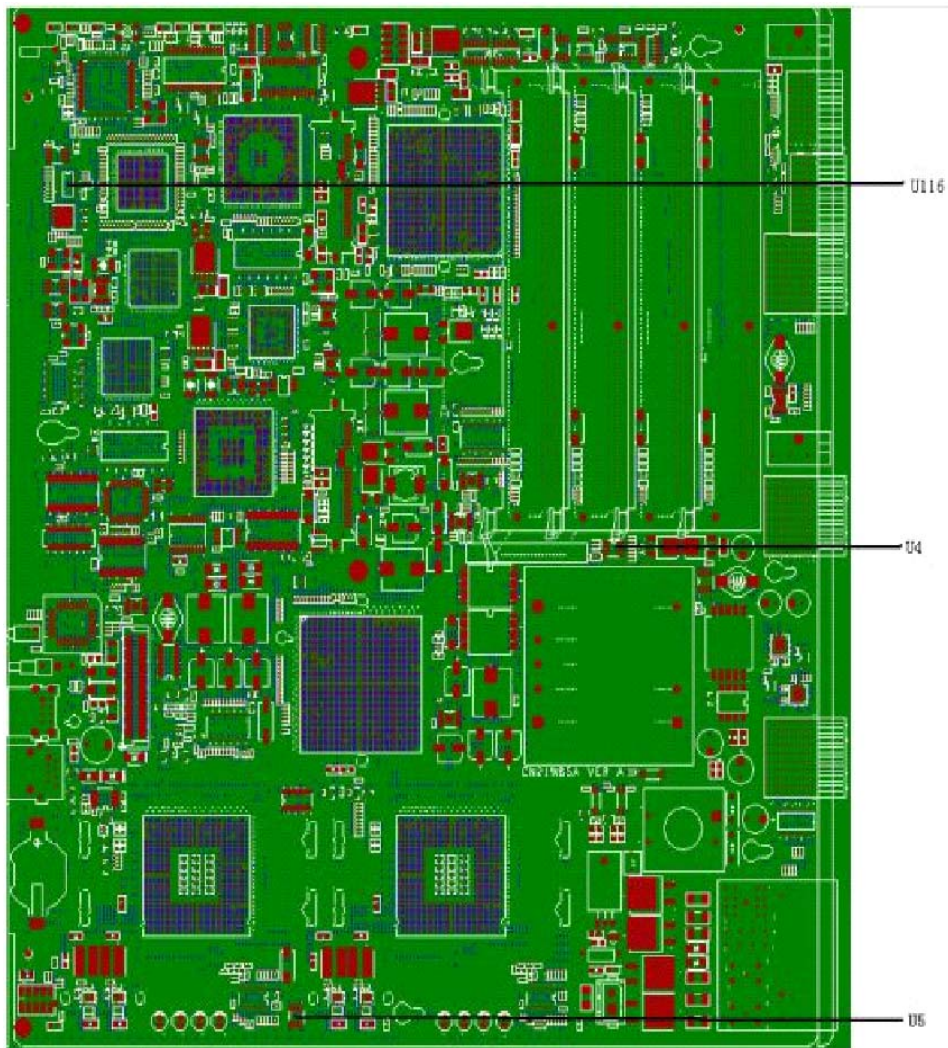
Sensor Name	Sensor Type
Watchdog	Watchdog State
FW Progress	Firmware Progress State
BIOS Bank	BIOS Bank State
Log Disabled	Is the SEL(System Event Log) disabled
ACPI State	ACPI State

For a detailed description please refer to *ATCA-7350: Control via IPMI Programmer's Reference*.

5.2.1 Temperature Sensor Location

Figure 5-1 illustrates the locations of the onboard temperature sensors.

Figure 5-1 On-Board Temperature Sensors

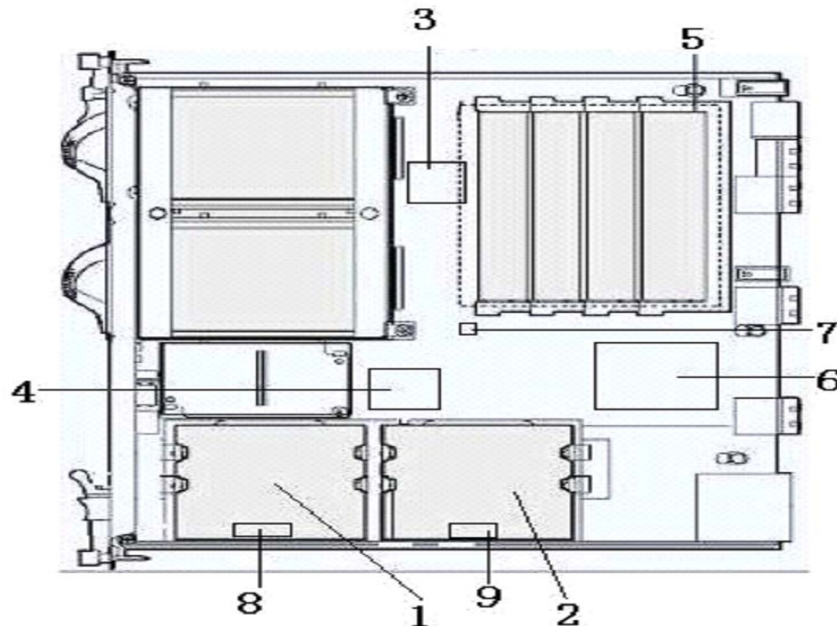


The table below provides additional information about the name of the sensors illustrated in Figure 5-1.

Location	Sensor Name	Description
U4	FBD inlet temp	Fully buffered DIMM inlet temperature sensor
U5	CPU inlet temp	CPU inlet temperature sensor
U116	HD env temp	HD inlet temperature sensor
CPU	CPU0 Core Rem	CPU0 die temperature sensor
CPU	CPU1 Core Rem	CPU1 die temperature sensor

5.2.2 Critical Temperature Limits

Figure 5-2 Components of ATCA-7350



The following table gives the temperature limits for single components as shown in the [Figure 5-2](#).

Location	Component	Temperature Limit
1	Intel Xeon Processor LV	5 to +85.9°C
2	Intel Xeon Processor LV	5 to +85.9°C
3	Intel 631xESB/632xESB I/O Controller Hub	5 to +105°C
4	Intel 5000 Series Chipset Memory Controller Hub(MCH)	5 to +105°C
5	Memory modules	SDRAM 0 to +95°C AMB 0 to +110°C
6	power converter 48V-12V	-40 to +105°C
7	DC/DC converter 12V-3.3V	-40 to +85°C
8	Voltage Regulator of cpu	0 to +125°C
9	Voltage Regulator of cpu	0 to +125°C

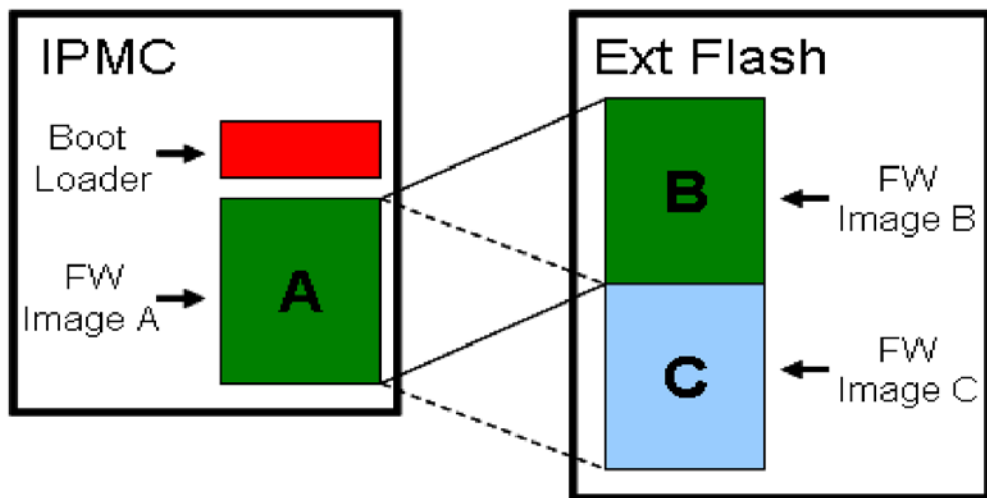
5.3 Flash ROM Recovery Mechanism

The IPMC provides a Flash ROM recovery mechanism that supports booting IPMC FW from a fail-safe location in case the content of the firmware flash inside the IPMC (Image A) is corrupted.

The IPMC controller chip has a Boot Loader that resides on the on-chip flash. The Boot Loader can determine the validity of FW Image A. The Boot Loader is programmed in manufacture and will not be changed by design. The ATCA-7350 provides an external Flash chip for the IPMC, which stores the FW Image B and FW Image C.

During upgrade, the IPMC automatically identifies the oldest FW image such as Image C. The respective section of the external Flash will be taken to store the new FW image. If the upgrade succeeds, the IPMC will restart automatically. The Boot Loader automatically chooses to load Image C into Flash A and boot from this new image. If the upgrade fails, Image C will be set to be invalid. In this case the Boot Loader loads Image B into Flash A and reboots the FW.

Figure 5-3 Flash ROM Recovery Mechanism



5.4 Setting Up a Serial Over LAN Session

5.4.1 Remote Blade Setup

The ATCA-7350 is the managed blade with the SOL function, which sends the serial data to the client.

Ensure that the ATCA-7350 has Linux OS such as RHEL4.0/5.0 loaded.

Configuring SOL Parameters

The shelf manager sends the command of SOL parameter configuration. The SOL parameter configuration complies with the IPMI2.0 specification. The configuration process is as follows:

NOTICE

All SOL parameters must be configured when the ATCA-7350 is in the M4 state.

1. Configure the user name.

Use the command Set User Name of IPMI2.0.

For example, on Artesyn shelf manager, set the user name to solusername.

```
ipmicmd -k "0 90 0 06 45 02 73 6f 6c 75 73 65 72 6e 61 6d
65" smi 0
```

2. Configure the password.

Use the command Set User Password of IPMI2.0.

For example, on Artesyn shelf manager, set the password to soluserpassword.

```
ipmicmd -k "0 90 0 06 47 82 02 73 6f 6c 75 73 65 72 70 61
73 73 77 6f 72 64" smi 0
```

3. Set user rights.

Use the command Set User Access Command of IPMI2.0.

For example, on Artesyn shelf manager, set the right of user 2 to Administrator (4).

```
ipmicmd -k "0 90 0 06 43 f1 02 04 00" smi 0
```

4. Activate the user.

Use the command Set User Password Command of IPMI2.0.

For example, on Artesyn shelf manager, enable user 2.

```
ipmicmd -k "0 90 0 06 47 82 01" smi 0
```

5. Set the IP address of the channel.

Use the command Set LAN Configuration Parameters of IPMI2.0 with Parameter selector of 3.

For example, on Artesyn shelf manager, set the IP address of channel 1 to 172.17.10.78 and that of channel 2 to 172.18.10.78.

```
ipmicmd -k "0 90 0 0c 01 01 03 ac 11 0a 4e" smi 0
```

```
ipmicmd -k "0 90 0 0c 01 02 03 ac 12 0a 4e" smi 0
```

Here, "90" is the IPMB address of the blade.

NOTICE

The IP addresses of the two channels cannot be set to be in the same network segment. Otherwise, the settings fail.

6. Set the subnet mask of the two channels.

Use the command Set LAN Configuration Parameters of IPMI2.0 with Parameter selector of 6.

For example, on Artesyn shelf manager, set the subnet masks of both channel 1 and channel 2 to 255.255.0.0.

```
ipmicmd -k "0 90 0 0c 01 01 06 ff ff 00 00" smi 0
```

```
ipmicmd -k "0 90 0 0c 01 02 06 ff ff 00 00" smi 0
```

Here, "90" is the IPMB address of the blade.

7. Enable the SOL load of the required channel.

Use the command Set SOL Configuration Parameters of IPMI2.0. The value of Parameter selector is 1.

On Artesyn shelf manager, enable the SOL of channel 1.

```
ipmicmd -k "0 90 0 0c 21 01 01 01" smi 0
```

After the previous seven steps, you can set up a session or an SOL connection to the IPMC through IPMITOOL. You can use the commands provided by IPMITOOL to directly configure the SOL for the IPMC.

If a shelf manager supports automatic configuration through the script, you can use the script to configure the SOL directly. For example, in the command line of Artesyn shelf manager, run the commands `sv_stop` and `sv_start` to restart the script and configure the SOL automatically. After that, you can use the SOL directly instead of configuring and modifying it.

The commands in the previous steps are applied to Artesyn shelf manager. If you want to send IPMI commands through KCS channels to the IPMC through the standard IPMI protocol software, you need to modify the command syntax.

For example, to set the IP address of channel 1, do as follows:

On Artesyn shelf manager, run the following command:

```
ipmicmd -k "0 90 0 0c 01 01 03 ac 11 0a 4e" smi 0
```

In the Linux OS, run the following command:

```
ipmicmd -k "f 0 0c 01 01 03 ac 11 0a 4e" smi 0
```

The data except the identity bytes is the same. The identity byte "f" is the KCS address and "0" is the logical unit number.

BIOS Configuration (Optional)

Access the BIOS of the ATCA-7350 and set the system serial baud rate to 9600-115200.



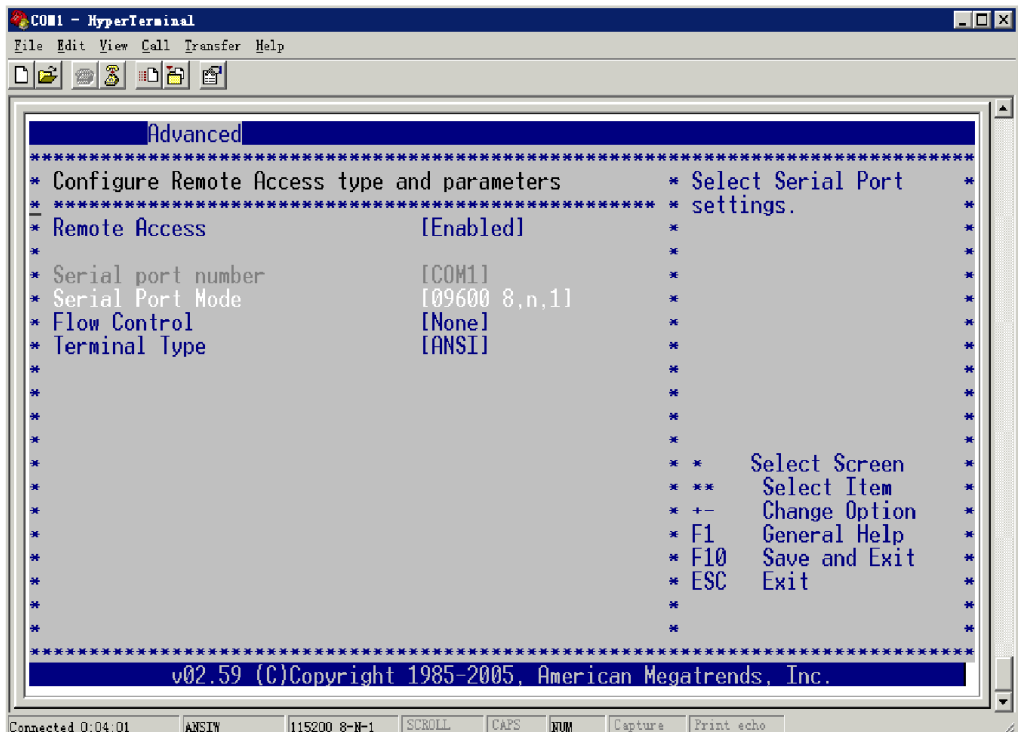
By default, remote access to the BIOS is enabled and the baud rate is set to 9600. The following BIOS configurations are optional.

Configure the BIOS of the ATCA-7350 as follows:

1. When the blade starts booting, press <F4> from HyperTerminal (or an equivalent terminal program) to enter the BIOS setup menu.
2. Choose the Advanced menu.
3. Choose Configure Remote Access menu.
 1. Change the Remote Access to "Enabled".
 2. Change the Flow Control parameter to "None".
 3. Change Serial Port Mode to the 9600-115200 baud rate if it is not already set to that speed.

4. Press <Esc>.
5. Choose Save and Exit.

Figure 5-4 BIOS Configuration of ATCA-7350



NOTICE

When client uses IPMITOOL in the Linux character interface, the ATCA-7350 BIOS setting interface cannot be displayed when you press <F4> (When you press < F4> in the Linux character interface, the terminal sends non standard ANSI data).

Operating System Configuration

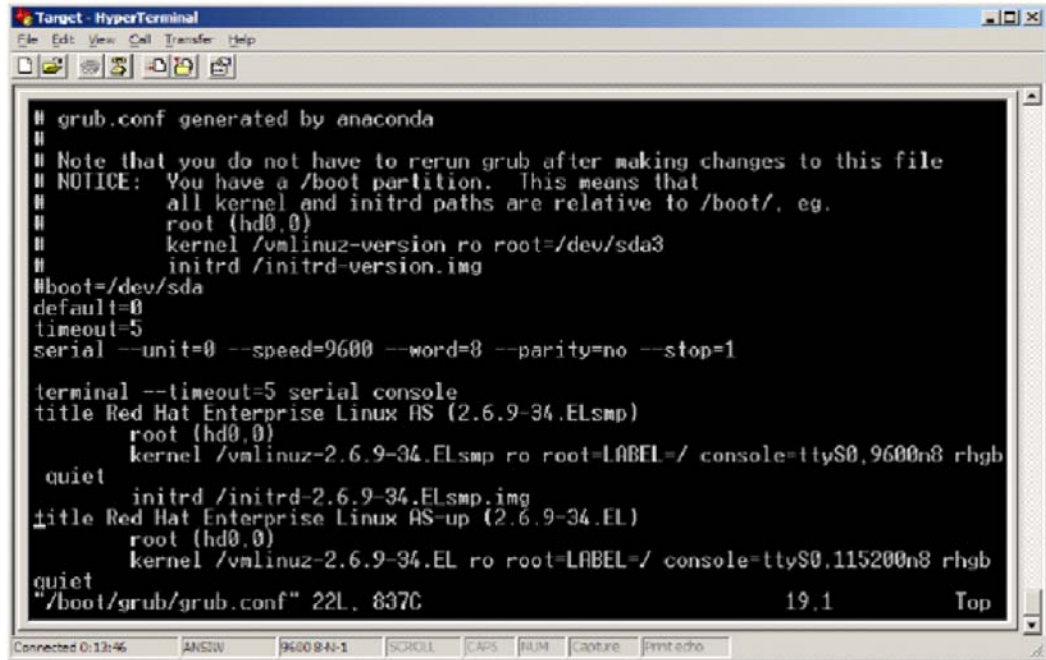
Log in to the OS of the ATCA-7350 and configure the system serial baud rate. At present, the baud rate of 115200 and below 115200 is supported.

For RedHat configuration:

1. Edit the `/boot/grub/grub.conf` file.
Type `vi /boot/grub/grub.conf` command.
2. Change the serial parameter to read
`serial --unit=0 --speed=9600 --word=8 --parity=no --stop=1`
3. Change the kernel line to read
`kernel /vmlinuz-2.6.9-34.ELsmp ro root=LABEL=/
console=ttyS0,9600n8 rhgb quiet`
Here you are adding `console=ttyS0,9600n8 rhgb quiet` to the end of your kernel line if it does not already exist.

4. Type :wq! to save the changes.

Figure 5-5 Configuration for RHEL



```
# grub.conf generated by anaconda
#
# Note that you do not have to rerun grub after making changes to this file
# NOTICE: You have a /boot partition. This means that
#          all kernel and initrd paths are relative to /boot/, eg.
#          root (hd0,0)
#          kernel /vmlinuz-version ro root=/dev/sda3
#          initrd /initrd-version.img
#boot=/dev/sda
default=0
timeout=5
serial --unit=0 --speed=9600 --word=8 --parity=no --stop=1

terminal --timeout=5 serial console
title Red Hat Enterprise Linux AS (2.6.9-34.ELsmp)
    root (hd0,0)
    kernel /vmlinuz-2.6.9-34.ELsmp ro root=LABEL=/ console=ttyS0,9600n8 rhgb
    quiet
    initrd /initrd-2.6.9-34.ELsmp.img
title Red Hat Enterprise Linux AS-up (2.6.9-34.EL)
    root (hd0,0)
    kernel /vmlinuz-2.6.9-34.EL ro root=LABEL=/ console=ttyS0,115200n8 rhgb
    quiet
"/boot/grub/grub.conf" 22L, 837C 19,1 Top
```

5. Ensure that at least one agetty process is running on the serial port.
To do this, modify the file /etc/inittab. vi /etc/inittab
Change the system console by adding/modifying the "co" service.
For RHEL:
co:2345:respawn:/sbin/agetty ttyS0 9600 vt100-nav
6. Reboot the blade.
Change HyperTerminal to 9600, 8, n, 1, n to make sure the BIOS, bootloader, and OS come up at 9600 baud.

5.4.2 Client Setup

The client receives serial data from the ATCA-7350 with the SOL function. The data is displayed on the client console (IPMITOOL).

Ensure that the ATCA-7350 has the following firmware/OS versions loaded:

- RedHat RHEL 4.0
- RedHat RHEL 5.1 or higher



ipmitool needs to be installed on a Linux computer located anywhere in the network.

In this example, ipmitool is running on another blade in the same chassis.

Configure the Ethernet Port

For RedHat RHEL:

1. Configure IP address of the Ethernet port:

```
vi /etc/sysconfig/network-scripts/ifcfg-eth0
ifcfg-eth0
BOOTPROTO=static
IPADDR=10.90.90.113
NETMASK=255.0.0.0
ONBOOT=yes
TYPE=Ethernet
DHCP_HOSTNAME=rhel4u3
```
2. Execute this command to restart the network:

```
service network restart
```

Installing ipmitool

For RedHat RHEL:

1. Download 1.8.9 or newer version of ipmitool from <http://ipmitool.sourceforge.net/>
2. Install ipmitool 1.8.9 on the Client. ipmitool provides the SOL client interface.
3. Type: `tar zxvf ipmitool-1.8.9.tar.gz`
4. Change directory to the ipmitool directory created after tar, `cd ipmitool-1.8.9`
5. Type: `./configure`
6. Type: `make install`
7. For RedHat RHEL only: Before using ipmitool, start the IPMI drivers.

Start the IPMI drivers:

```
# /etc/init.d/ipmi start (This will start IPMI drivers for this particular session only.)
```

```
# chkconfig ipmi on (This starts IPMI drivers by default on the next reboot.)
```

If the computer that ipmitool was just installed on has a local IPMC, the ipmitool installation can be tested by typing:

```
ipmitool raw 6 1
```

If ipmitool is running correctly, the response should be in a format similar to:

```
20 81 01 03 02 3f 57 01 00 0c 08 01 05 01 00.
```

Start an SOL Session

NOTICE

After the SOL function is activated, the payload serial port cannot be output from the panel. If you set the system serial port to be output to the panel through IPMI command at this time, you can use the serial port through the panel only after the SOL is disconnected.

Before starting an SOL session, first make sure you can ping the ATCA-7350.

On the client, execute this command:

```
# ipmitool -I lanplus -L operator -H <SOL Target IP addr> -U
solusername -P soluserpassword sol activate
```

If the SOL session is activated successfully, you get the following message:

```
[SOL Session operational. Use ~? for help]
```

Press <Enter> and the target output should be displayed on your console.

If the SOL session does not activate, run this command and check how ipmitool is configured:

```
# ipmitool -I lanplus -L operator -H <SOL Target IP Addr> -U
solusername -P soluserpassword sol info
```

Checking SOL Configuration

On the client, there are two commands that can be issued to check the SOL configuration on the Ethernet channels.

- On the client, use "ipmitool lan print 1" to display the configuration for the first Ethernet channel.(This Ethernet port is connected to the Ethernet switch located in Slot #7 on the chassis)
- On the client, use "ipmitool lan print 2" to display the configuration for the second Ethernet channel.(This Ethernet port is connected to the Ethernet switch located in Slot #8 on the chassis)

```
root@DRBlade14:/usr/bin# ipmitool lan print 1
```

```
Set in Progress : Set Complete
```

```
Auth Type Support : NONE MD2 MD5 PASSWORD
```

```
Auth Type Enable : Callback :
```

```
: User :
```

```
: Operator :
```

```
: Admin :
```

: OEM :

IP Address Source : Unspecified

IP Address : 10.90.90.14

Subnet Mask : 255.255.255.0

MAC Address : 00:0e:0c:98:55:6e

SNMP Community String :

IP Header : TTL=0x40 Flags=0x40 Precedence=0x00 TOS=0x10

BMC ARP Control : ARP Responses Disabled, Gratuitous ARP Disabled

Gratituous ARP Intrvl : 2.0 seconds

Default Gateway IP : 0.0.0.0

Default Gateway MAC : 00:00:00:00:00:00

Backup Gateway IP : 0.0.0.0

Backup Gateway MAC : 00:00:00:00:00:00

RMCP+ Cipher Suites : None

Cipher Suite Priv Max : XXXXXXXXXXXXXXXX

: X=Cipher Suite Unused

: c=CALLBACK

: u=USER

: o=OPERATOR

: a=ADMIN

Ending an SOL Session

To end an SOL session:

1. Type: <~>.



After pressing <~> just once, this symbol will not appear on the console screen.

This is done at the login prompt.

2. After typing <~>, the SOL session will deactivate on the ATCA-7350. To make sure the ATCA-7350 SOL session is deactivated, type the following command:

```
# ipmitool -I lanplus -L operator -H <SOL Target IP Addr> -  
U solusername - P soluserpassword sol deactivate
```

SOL is stopped completely and the serial console port is now redirected to the front panel of the ATCA-7350.

6.1 Overview

This chapter describes:

- BIOS flash memory organization
- Resource configuration
- System management BIOS
- Legacy USB support
- BIOS updates
- Boot options
- Fast booting systems
- BIOS security features
- BIOS setup
- Main menu
- Advanced menu
- Boot menu
- Security menu
- Exit menu

6.2 Introduction

The ATCA-7350 uses an AMI BIOS, which can be updated either by using a firmgrade upgrade tool running under Linux or via IPMI using HPM.1 compliant firmware upgrade utilities. For an example on how to upgrade with Red Hat RHEL5.x refer to [Chapter 8, Software Upgrade, on page 159](#). In addition to the BIOS and BIOS setup program, the flash memory contains POST and Plug and Play support.

The ATCA-7350 supports system BIOS shadowing, allowing the BIOS to execute from 64-bit onboard write-protected system memory.

The BIOS displays a message during POST identifying the type of BIOS and a revision code.

English is the only supported language in the BIOS setup menu and boot-up text output.

6.3 BIOS Flash Memory Organization

The ATCA-7350 supports two 8 Mbit (1 MByte) BIOS flash ROMs defined as BIOS bank A and BIOS bank B. The IPMC controls the active and backup boot bank. By default the ATCA-7350 boots up from BIOS bank A. If the CPU fails to boot from the active BIOS bank, the active BIOS bank is switched over to the backup BIOS automatically and the CPU tries to boot from the backup bank. A firmware upgrade to the BIOS flash always affects the active BIOS bank. To upgrade the backup BIOS this bank needs to become the active BIOS bank first. This can be achieved via IPMI OEM command.

6.4 System Management BIOS

System Management BIOS (SMBIOS) is a Desktop Management Interface compliant method for managing computers in a managed network.

The main component of SMBIOS is the management information format database, which contains information about the computing system and its components. Using SMBIOS, a system administrator can obtain the system types, capabilities, operational status, and installation dates for system components. The management information format database defines the data and provides the method for accessing this information. The BIOS enables applications such as third-party management software to use SMBIOS. The BIOS stores and reports the following SMBIOS information:

- BIOS data, such as the BIOS revision level
- Fixed-system data, such as peripherals, serial numbers, and asset tags
- Resource data, such as memory size, cache size, and processor speed

6.5 Legacy USB Support

Legacy USB support enables USB devices such as keyboards, mice, and hubs to be used even when the operating system's USB drivers are not yet available. Legacy USB support is used to access the BIOS Setup program, and to install an operating system that supports USB. By default, Legacy USB support is set to Enabled.

Legacy USB support operates as follows:

1. When you apply power to the computer, legacy support is disabled.
2. POST begins.
3. Legacy USB support is enabled by the BIOS allowing you to use a USB keyboard to enter and configure the BIOS Setup program and the maintenance menu.
4. POST completes.
5. The operating system loads. While the operating system is loading, USB keyboards and mice are recognized and may be used to configure the operating system. (Keyboards and mice are not recognized during this period if Legacy USB support was set to Disabled in the BIOS Setup program.)
6. After the operating system loads the USB drivers, all legacy and non-legacy USB devices are recognized by the operating system, and Legacy USB support from the BIOS is no longer used.

To install an operating system that supports USB, verify that Legacy USB support in the BIOS Setup program is set to Enabled and follow the operating system's installation instructions.



Legacy USB support is for keyboards, mice, and hubs only. Other USB devices are not supported in legacy mode.

6.6 Boot Options

In the BIOS Setup program, the user can choose to boot from available Boot Devices including hard disks, network boot and USB devices. In every POST, the BIOS will detect all available boot devices then display them on the boot order screen, with the exception of the PXE Boot Agent which displays even if the LAN cable is not connected after the PXE Option is enabled in BIOS setup menu.

The default setting is: 1st Boot Device (USB), 2nd Boot Device (Hard Disk), 3rd Boot Device (LAN).

6.6.1 CD-ROM and Network Boot

Under the Boot menu in the BIOS Setup program, USB CD-ROM is listed as a boot device (removable media). Boot devices are defined in priority order.

Accordingly, if there is not a bootable CD in the CD-ROM drive, the system will attempt to boot from the next defined drive.

The base network can be selected as a boot device. User may check/modify enable/disable selection of PXE network boot in the BIOS Setup Menu.

6.6.2 Booting Without Attached Devices

For use in embedded applications, the BIOS has been designed so that after passing the POST, the operating system loader is invoked even if the keyboard and mouse are not present.

6.6.3 Boot Option Configuration via IPMI

The ATCA-7350 supports remote configuration of the BIOS boot options via IPMI Set/Get System Boot Option command. For more details refer to *ATCA-7350 Control via IPMI Programmer's Reference*.

6.7 Fast Booting Systems

6.7.1 Quick Boot

Use of the following BIOS Setup program settings reduces the POST execution time.

In the BIOS Setup Menu:

- Disable PXE Boot option if customer configuration does not use PXE boot.
- Disable Quiet Boot, which eliminates display of the logo splash screen. This could save several seconds of painting complex graphic images and changing video modes.
- Enable Quick Boot. This feature bypasses memory count and the search for a removable drive. In the Peripheral Configuration submenu, disable the LAN device if it will not be used. This can reduce up to four seconds of option ROM boot time.



It is possible to optimize the boot process to the point where the system boots so quickly that the Intel logo screen (or a custom logo splash screen, if implemented) will not be seen. Monitors and hard disk drives with minimum initialization times can also contribute to a boot time that might be so fast that necessary logo screens and POST messages cannot be seen.

6.8 BIOS Security Features

The BIOS includes security features that restrict access to the BIOS Setup program and which can boot the computer. A supervisor password and a user password can be set for the BIOS Setup program and for booting the computer, with the following restrictions:

- The supervisor password gives unrestricted access to view and change all the Setup options in the BIOS Setup program. This is the supervisor mode.
- The user password gives restricted access to view and change Setup options in the BIOS Setup program. This is the user mode.
- If only the supervisor password is set, pressing the <Enter> key at the password prompt of the BIOS Setup program allows the user restricted access to Setup.
- If both the supervisor and user passwords are set, users can enter either the supervisor password or the user password to access Setup. Users have access to Setup respective to which password is entered.

- Setting the use password together with the "Password Check" option allows user restriction for setup only or both setup and boot. A password prompt will be displayed accordingly.
- [Table 6-1](#) shows the effects of setting the supervisor password and user password. This table is for reference only and is not displayed on the screen.

Table 6-1 Supervisor and User Password Functions

Password Set	Supervisor Mode	User Mode	Password to Enter Setup	Password During Boot
None	Can change all options	Can change all options ¹	None	None
Supervisor and User	Can change all options	Based on user access level: No Access, View Only, Limited, Full Access	Supervisor or user	If password check option is set to Setup then no password required. Otherwise requires either supervisor or user password.
Supervisor only	Can change all options	Based on user access level: No Access, View Only, Limited, Full Access.	Supervisor (for supervisor mode) or enter only (for user mode)	If password check option is set to Setup then no password required. Otherwise requires either supervisor password or enter only.
User only	Cannot get into supervisor mode until user password is cleared.	Can change all options	User	If password check option is set to Setup then no password required. Otherwise requires user password.

1. If no password is set, any user can change all Setup options

6.9 BIOS Setup

The BIOS Setup program can be used to view and change the BIOS settings for the computer. The BIOS Setup program is accessed by pressing the <DEL> key after the Power-On Self-Test (POST) memory test begins and before the operating system boot begins. [Table 6-2](#) lists the BIOS Setup program menu features.

Table 6-2 BIOS Setup Program Menu Bar

Main	Advanced	Boot	Security	Exit
Indicates the BIOS information, processor and memory information and setting the system date and time.	Configures advanced features available through the chipset	Selects boot options and power supply controls	Sets passwords and security features	Saves or discards changes to Setup program options

[Table 6-3](#) lists the function keys available for menu screens.

Table 6-3 BIOS Setup Program Function Keys

BIOS Setup Program Function Key	Description
<←> or <↵>	Selects a different menu screen (Moves the cursor left or right).
<↑> or <↓>	Selects an item or sub-screen (Moves the cursor up or down).
<+> or <->	Change the field value of a particular setup item.
<Tab>	Selects a setup fields.
<Enter>	Executes command or selects the submenu.
<F1>	Display the general help screen.
<F8>	Load the fail-safe configuration values of the BIOS.
<F9>	Load the optional defaults values of the BIOS.
<F10>	Save the current values and exits the BIOS Setup program.
<Esc>	Exits the menu.

6.9.1 Main Menu

To access this menu, select Main on the menu bar at the top of the screen.

The following table describes the Main menu. This menu reports processor and memory information and is for configuring the system date and system time.

Table 6-4 Main Menu

Feature	Options	Description
BIOS ID	BIOS Version, Build Date	Displays the BIOS Information.
Processor	Type, Speed, Count	Reports processor type, speed and physical processor count.
System Memory Size	Size: Depends on the number and size of installed memory DIMMs	Displays system memory size.
System Time	Hour, minute, and Second	Specifies the current time.
System Date	Day of week Month/day/year	Specifies the current date.

6.9.2 Advanced Menu

To access this menu, select Advanced on the menu bar at the top of the screen.

The following table describes the Advanced menu. This menu is used for setting advanced features that are available through the chipset.

Table 6-5 Advanced Menu

Feature	Options	Description
CPU Configuration	Select to display submenu	Display processor detail information.
Memory Configuration	Select to display submenu	Set the MCH branch mode.
Event Log Configuration	Select to display submenu	Enable/Disable error logging.

Table 6-5 Advanced Menu (continued)

Feature	Options	Description
USB Configuration	Select to display submenu	Enable/Disable USB devices.
IPMI 2.0 Configuration	Select to display submenu	Enable/Disable Watch Dog function and indicate BMC status.
MPS Configuration	Select to display submenu	Select MPS revision.
Remote Access Configuration	Select to display submenu	Enable/Disable serial re-direction function.
PXE Function Configuration	Select to display submenu	Enable/Disable PXE boot function.
MCFG Table Support	Select to set	Enable/Disable MCFG table support.

6.9.2.1 CPU Configuration Submenu

To access this submenu, select Advanced on the menu bar, then CPU Configuration.

The submenu represented in the following table is used for configuring the CPU.

Table 6-6 CPU Configuration Submenu

Feature	Options	Description
Manufacturer		Display CPU Manufacturer.
Brand String		Display CPU Brand String.
Frequency		Display CPU Frequency.
FSB Speed		Display CPU FSB speed.
Cache L1		Display CPU Cache L1 size.
Cache L2		Display CPU Cache L2 size.
Ratio Actual Value		Display CPU ratio value.
Execute Disabled Bit	Disabled Enabled	When disabled, force the XD feature flag to always return 0.
Hardware Prefetcher	Enabled	Enable/disable hardware prefetching

Table 6-6 CPU Configuration Submenu (continued)

Feature	Options	Description
Adjacent Cache Line Prefetch	Enabled	Enable/disable adjacent cache line prefetching
Intel(R) SpeedStep(tm) tech	Enabled	Enable/disable SpeedStep

NOTE: **Bold** text indicates default setting.

6.9.2.2 Memory Configuration Submenu

To access this submenu, select Advanced on the menu bar, and then Memory Configuration.

The menu represented in the following table is used to configure memory options.

Table 6-7 Memory Configuration Submenu

Feature	Options	Description
MCH Branch Mode	Branch Sequencing Branch Interleave Branch Mirroring Single Channel 0	Selecting the mode for memory addressing between branch 0 and branch 1.

NOTE: **Bold** text indicates default setting.

6.9.2.3 Event Log Configuration Submenu

To access this submenu, select Advanced on the menu bar, and then Event Log Configuration.

The menu represented in the following table is used to configure Event Log options.

Table 6-8 Event Log Configuration Submenu

Feature	Options	Description
View Event Log		View all unread events on the event log.
Mark all events as read		Mark all unread events as read.

Table 6-8 Event Log Configuration Submenu (continued)

Feature	Options	Description
Clear Event Log		Discard all events in the event log.
ECC Event Logging	Disabled Enabled	Enable/Disable ECC event logging.

6.9.2.4 USB Configuration Submenu

To access this submenu, select Advanced on the menu bar, and then USB Configuration.

The menu represented in the following table is used to configure USB device options.

Table 6-9 USB Configuration Submenu

Feature	Options	Description
USB Device Enabled		Indicate the USB device attached to the system.
USB Functions	Disabled 2 USB Ports 4 USB Ports 6 USB Ports 8 USB Ports	Select USB ports used in system.
USB 2.0 Controller	Enabled Disabled	Enable/Disable USB 2.0 function.
USB 2.0 Controller Mode	FullSpeed HiSpeed	Select USB2.0 Mode.

NOTE: Bold text indicates default setting.

6.9.2.5 IPMI 2.0 Configuration Submenu

To access this submenu, select Advanced on the menu bar, and then IPMI 2.0 Configuration.

The menu represented in the following table is used to configure IPMI 2.0 Configuration options.

Table 6-10 IPMI 2.0 Configuration Submenu

Feature	Options	Description
Status of BMC	Working/Not Working	Indicate the status of KCS channel between BIOS and BMC.
BMC WDT Action For POST	Disabled Reset System Power Down Power Cycle	Allows the BMC to reset or power down the system if the system crashes or hangs at POST.
BMC WDT Time Out For POST	2 Min 3 Min 5 Min 8 Min 15 Min	Amount of time for BMC to wait before assuming the system has crashed and needs to be reset at POST.
BMC WDT Action For OS Loader	Disabled Reset System Power Down Power Cycle	Allows the BMC to reset or power down the system if the system crashes or hangs at OS Loader.
BMC WDT Time Out For OS Loader	2 Min 3 Min 5 Min 8 Min 15 Min	Amount of time for BMC to wait before assuming the system has crashed and needs to be reset at OS Loader.

NOTE: **Bold** text indicates default setting.

NOTE: BMC means IPMC functionality.

6.9.2.6 MPS Configuration Submenu

To access this submenu, select Advanced on the menu bar, and then MPS Configuration.

The menu represented in the following table is used to configure MPS Configuration options.

Table 6-11 MPS Configuration Submenu

Feature	Options	Description
MPS Revision	1.1 1.4	Select MPS Revision.

NOTE: Bold text indicates default setting.

6.9.2.7 Remote Access Configuration Submenu

To access this submenu, select Advanced on the menu bar, and then Remote Access Configuration.

The menu represented in the following table is used to configure Remote Access Configuration options.

Table 6-12 Remote Access Configuration Submenu

Feature	Options	Description
Remote Access	Disabled Enabled	Enable/Disable Remote access function.
Serial port number	COM1	Select COM Port for remote access function.
Serial Port Mode	115200 8, n, 1 57600 8, n, 1 38400 8, n, 1 19200 8, n, 1 9600 8, n, 1	Select Serial Port settings.
Flow Control	None Hardware Software	Select Flow Control for console redirection.
Terminal Type	ANSI VT100 VT-UTF8	Select the target terminal type.

NOTE: Bold text indicates default setting.

6.9.2.8 PXE Function Configuration Submenu

To access this submenu, select Advanced on the menu bar, and then PXE Function Configuration.

The menu represented in the following table is used to configure PXE Function options.

Table 6-13 PXE Function Configuration Submenu

Feature	Options	Description
Base1 PXE Function	Disabled Enabled	Disable/Enable Base1 PXE Function.
MAC Address		Show the MAC Address of Base1.
Base2 PXE Function	Disabled Enabled	Disable/Enable Base2 PXE Function.
MAC Address		Show the MAC Address of Base2.
Fabric1 MAC Address		Show the MAC Address of Fabric1.
Fabric2 MAC Address		Show the MAC Address of Fabric2.
Update MAC Address		Show the MAC Address of Update.

NOTE: Bold text indicates default setting.

6.9.2.9 MCFG Table Support item

To access this submenu, select Advanced on the menu bar, and then MCFG Table Support Item.

The item represented in the following table is used to configure MCFG Table support options.

Table 6-14 MCFG Table Support Item

Feature	Options	Description
MCFG Table Support	Disabled Enabled	Disable this item for Linux installation. If Linux kernel version is 2.6.16 or later, Choose Enable. Default is Disabled.

NOTE: Bold text indicates default setting.

6.9.3 Boot Menu

To access this menu, select Boot from the menu bar at the top of the screen.

The menu represented in the following table is used to set the boot features and the boot sequence.

Table 6-15 Boot Menu

Feature	Options	Description
Boot Settings Configuration	Select to display submenu	Set boot options.
Boot Device Priority	Select to display submenu	Set first, second and last boot device.
Network Drives	Select to display submenu	Set first and second network drives.

6.9.3.1 Boot Settings Configuration Submenu

To access this submenu, select Boot on the menu bar, and then Boot Settings Configuration.

The menu represented in the following table is used to configure Boot Settings.

Table 6-16 Boot Settings Configuration Submenu

Feature	Options	Description
Quick Boot	Disabled Enabled	Disable/Enable the BIOS to skip certain tests while booting, to decrease the time needed to boot the system.
Quiet Boot	Disabled Enabled	Display normal POST messaged/OEM logo.
Bootup Num-Lock	Off On	Set power-on state for num-lock.
Wait For 'F1' If Error	Disabled Enabled	Disable/enable waiting for <F1> key to be pressed if error occurs.

Table 6-16 Boot Settings Configuration Submenu (continued)

Feature	Options	Description
Hit 'DEL' Message Display	Disabled Enabled	Display "Press DEL to run Setup" in POST.
BOOT via IPMI Parameter	Enabled Disabled	Enable/disable system boot via IPMI parameter

NOTE: **Bold** text indicates default setting.

6.9.3.2 Boot Device Priority Submenu

To access this submenu, select Boot on the menu bar, and then Boot Device Priority..

The menu represented in the following table is used to configure boot device priority. The options depend on what IPL devices attached to the system.

Table 6-17 Boot Device Priority Submenu

Feature	Options	Description
1st Boot Device	On-board USB Flash Disk Hard Drive Network	Set the 1st boot device.
2nd Boot Device	On-board USB Flash Disk Hard Drive Network	Set the 2nd boot device.
Last Boot Device	On-board USB Flash Disk Hard Drive Network	Set the last boot device.

NOTE: Devices will show as an option only if the device is installed and it is detected by the BIOS during boot.

NOTE: **Bold** text indicates default setting.

6.9.4 Security Menu

To access this menu, select Security from the menu bar at the top of the screen.

The menu represented by the following table is for setting passwords and security features.

Table 6-18 Security Menu

Feature	Options	Description
Supervisor Password		Display the Supervisor Password status. Installed/Not Installed
User Password		Display the Supervisor Password status. Installed/Not Installed
Change Supervisor Password		Set the supervisor password.
User Access Level	No Access View Only Limited Full Access	Sets the user access level for Setup.
Change User Password		Set the user password.
Clear User Password		Clear the user password.
Password Check	Setup Always	Set when passwords get checked.
Supervisor Password		Display the Supervisor Password status. Installed/Not Installed

NOTE: **Bold** text indicates default setting.

NOTE: By default the Supervisor Password and User Password are not installed.

6.9.5 Exit Menu

To access this menu, select Exit from the menu bar at the top of the screen. The menu represented in the following table is for exiting the BIOS Setup program, saving changes, and loading and saving defaults.

Table 6-19 Exit Menu

Feature	Options	Description
Save Changes and Exit		Exit system setup after saving the changes.
Discard Changes and Exit		Exit system setup without saving any changes.
Discard Changes		Discards changes done so far to any of the setup questions.
Load Optimal Defaults		Load optimal default values for all the setup questions.
Load FailSafe Defaults		Load failsafe default values for all the setup questions.

RAID 1 Operations

7.1 Overview

This chapter describes:

- RAID 1 checking
- RAID 1 setup and synchronization
- RAID 1 activation
- RAID 1 deletion
- Locating hard disks

7.2 Checking RAID 1

To check whether RAID 1 is setup between the two SAS hard disks of the ATCA-7350, proceed as follows:

When the ATCA-7350 is started, the following information is displayed on the terminal:

```
LSI Logic Corp. MPT SAS BIOS
```

```
MPTBIOS-6.12.00.00(2006.10.31)
```

```
Copyright 2000-2006 LSI Logic Corp.
```

```
Press <Ctrl>+<C> to start LSI Logic Configuration Utility...
```

Press <Ctrl>+<C>. The array view window of the LSI BIOS configuration program is displayed as shown in [Figure 7-1](#).

If Status is displayed as Optimal, RAID 1 is setup between the two SAS hard disks.

Figure 7-1 Array View Window

Array	1 of 1						
Identifier	LSILOGICLogical Volume 3000						
Type	IM						
Scan Order	0						
Size(MB)	34332						
Status	Optimal						
Manage Array							
Slot Num	Device Identifier		RAID Disk	Hot Spr	Drive Status	Pred Fail	Size (MB)
0	FUJITSU MAY2036RC	0102	Yes	No	Primary	No	34332
1	FUJITSU MAY2036RC	0103	Yes	No	Secondary	No	34332

7.3 Setting and Synchronizing RAID 1

NOTICE

If the ATCA-7350 is configured with two SAS hard disks, you must create RAID 1 between these two SAS hard disks before you install the operating system (OS). This ensures synchronization of the data on the two hard disks.

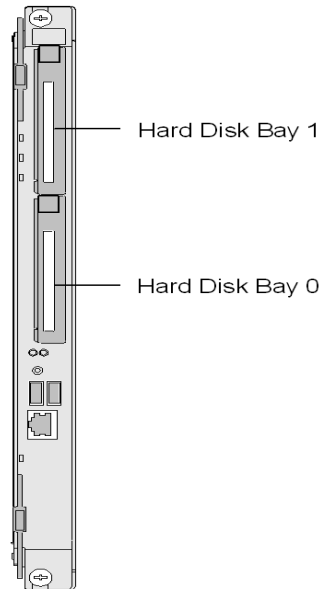
You must define source disk and target disk before you create RAID 1.

- Source disk: used to back up data
- Target disk: used to store the backup data

HD 0 and HD 1 can be the source disk (or the target disk). That means, if you specify one disk as the source disk, the other is the target disk.

Figure 7-2 shows the positions of the two SAS hard disks of the ATCA-7350.

Figure 7-2 Positions of the two SAS Hard Disks of the ATCA-7350



Setting and Synchronizing RAID 1

To set and synchronize RAID 1, proceed as follows:

1. Start the system.

When the ATCA-7350 is started, the following information is displayed on the terminal:

```
LSI Logic Corp. MPT SAS BIOS  
MPTBIOS-6.12.00.00(2006.10.31)  
Copyright 2000-2006 LSI Logic Corp.  
Press <Ctrl>+<C> to start LSI Logic Configuration  
Utility...
```

Press <Ctrl>+<C>. The LSI BIOS window is displayed as shown in [Figure 7-3](#).

Figure 7-3 LSI BIOS Window

Adapter	PCI Bus	PCI Dev	PCI Fnc	PCI Slot	FW Revision	Status	Boot Order
SAS1064	05	01	00	00	0.11.01.00-IR	Enabled	0

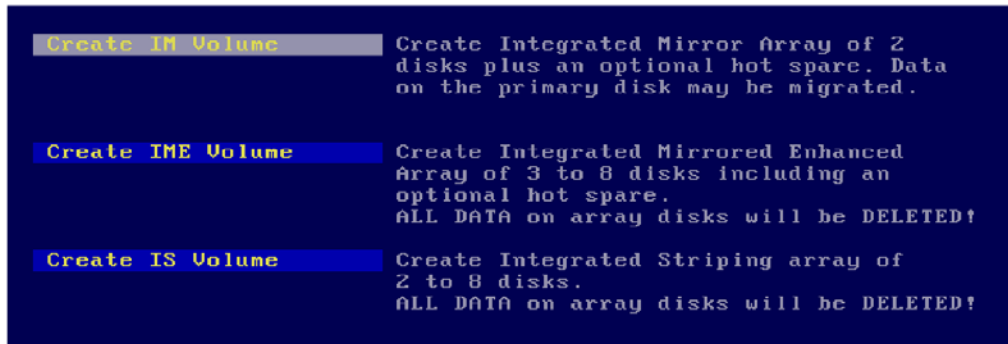
2. Select the currently used SAS controller (SAS1064). Press <Enter>. The Adapter property window is displayed as shown in [Figure 7-4](#).

Figure 7-4 Adapter Property Window

Adapter	SAS1064
PCI Slot	00
PCI Address (Bus/Dev/Func)	05:01:00
MPT Firmware Revision	0.11.01.00-IR
SAS Address	500E0FC1:23456775
NVDATA Version	25.09
Status	Enabled
Boot Order	0
Boot Support	[Enabled BIOS & OS]
RAID Properties	
SAS Topology	
Advanced Adapter Properties	

3. Select RAID Properties. Press <Enter>. The window for selecting the array type is displayed as shown in [Figure 7-5](#).

Figure 7-5 Window for Selecting the Array Type



4. Select Create IM Volume. Press <Enter>. The window for selecting the source disk and the target disk is displayed as shown in [Figure 7-6](#).

Figure 7-6 Window for Selecting the Source Disk and the Target Disk

Array Type:		IM					
Array Size(MB):		-----					
Slot Num	Device Identifier	RAID Disk	Hot Spr	Drive Status	Pred Fail	Size (MB)	
0	FUJITSU MAY2036RC	0102 [No]	[No]	-----	---	35068	
1	FUJITSU MAY2036RC	0103 [No]	[No]	-----	---	35068	

NOTICE

Be cautious to select the source disk and target disk. If you select a wrong disk, the data on the source disk may be lost.

5. Select the hard disk that is set to the source disk. Enter Space for confirmation. The window for selecting the RAID 1 creation mode is displayed as shown in [Figure 7-7](#).

Figure 7-7 Window for Selecting the RAID 1 Creation Mode

```

M      - Keep existing data, migrate to an IM array.
        Synchronization of disk will occur.

D      - Overwrite existing data, create a new IM array
        ALL DATA on ALL disks in the array will be DELETED!!
        No Synchronization performed.
  
```



- If you press <M>, the system saves the data in the current source disk. The target disk copies the data in the source disk. If you press <D>, the system deletes the data from the current source disk and creates a new RAID 1 array.
- In the window for selecting source disk and target disk, Slot Num 0 corresponds to HD0 as shown in [Figure 7-2](#), and Slot Num 1 to HD1.

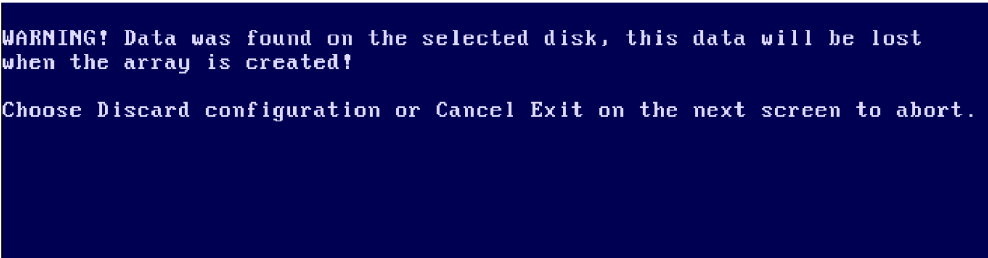
6. Press <M> to specify the source disk. The window is displayed as shown in [Figure 7-8](#). For the source disk, Yes is displayed in RAID Disk and Primary Drive Status.

Figure 7-8 Window for Selecting the Source Disk and Target Disk

Array Type:		IM					
Array Size(MB):		-----					
Slot Num	Device Identifier		RAID Disk	Hot Spr	Drive Status	Pred Fail	Size (MB)
0	FUJITSU MAY2036RC	0102	[Yes]	[No]	Primary	---	35068
1	FUJITSU MAY2036RC	0103	[No]	[No]	-----	---	35068

- 7. Select the other disk. Enter Space for confirmation. The warning window is displayed as shown in [Figure 7-9](#).

Figure 7-9 Warning Window



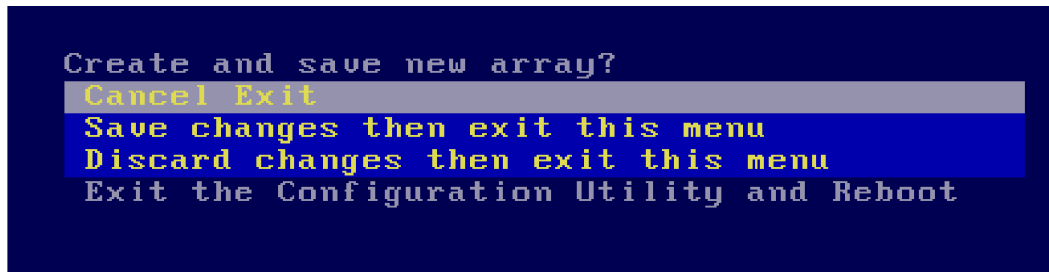
- 8. Press <C>. The window for selecting the source disk and the target disk is displayed as shown in [Figure 7-10](#).

Figure 7-10 Window for Selecting the Source Disk and the Target Disk

Array Type:		IM					
Array Size(MB):		34332					
Slot Num	Device Identifier	RAID Disk	Hot Spr	Drive Status	Pred Fail	Size (MB)	
0	FUJITSU MAY2036RC	0102	[Yes]	[No]	Primary	---	35068
1	FUJITSU MAY2036RC	0103	[Yes]	[No]	Secondary	---	35068

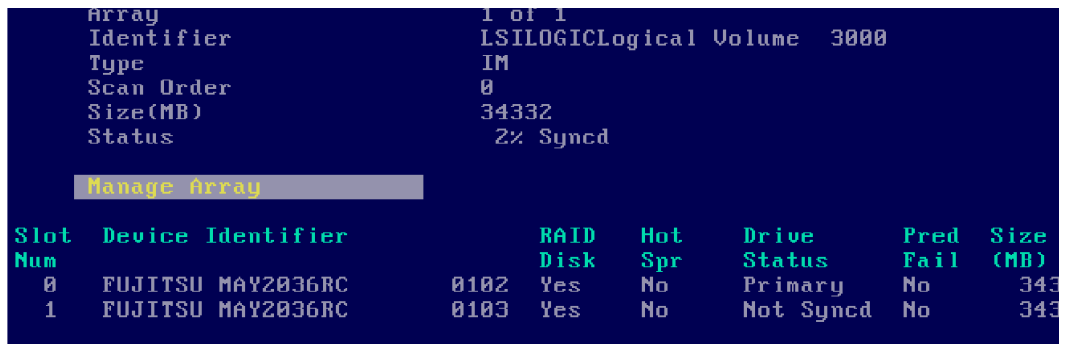
9. Press <C>. The window for saving the settings is displayed as shown in [Figure 7-11](#).

Figure 7-11 Window for Saving the Settings



10. Select Save changes then exit this menu and press <Enter>. RAID 1 is created successfully and synchronized automatically. As shown in [Figure 7-12](#), the information in Status shows the RAID 1 synchronization progress.

Figure 7-12 Array View Window



NOTICE

If the system is restarted during RAID 1 synchronization, RAID 1 is synchronized again and the previous progress cannot be reserved.

11. After RAID 1 synchronization is complete, Optimal is displayed in Status in the array view window. See [Figure 7-13](#).

Figure 7-13 Array View Window

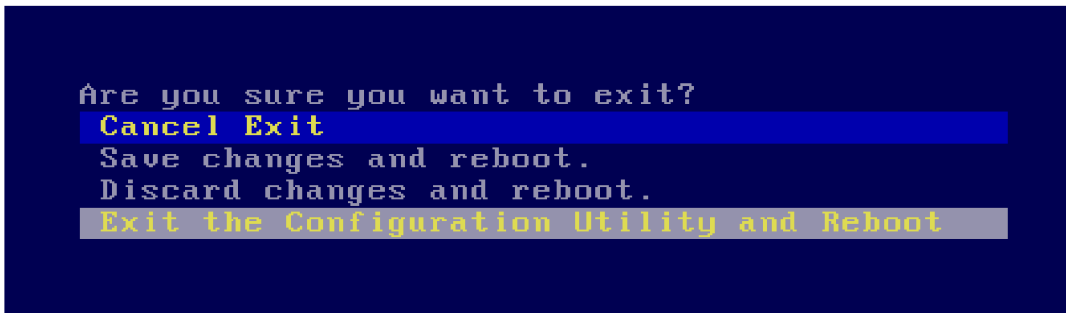
Array	1 of 1					
Identifier	LSILOGICLogical Volume 3000					
Type	IM					
Scan Order	0					
Size(MB)	34332					
Status	Optimal					
Manage Array						
Slot Num	Device Identifier	RAID Disk	Hot Spr	Drive Status	Pred Fail	Size (MB)
0	FUJITSU MAY2036RC	0102	Yes	No	Primary	No 3433
1	FUJITSU MAY2036RC	0103	Yes	No	Secondary	No 3433



Through Manage Array, you can synchronize, activate, or remove the created RAID 1.

12. Enter <Esc>. Select Exit the Configuration Utility and Reboot. See [Figure 7-14](#). Press <Enter>. The system is restarted.

Figure 7-14 Window for Saving the Settings



NOTICE

After setting RAID 1 is complete and the system is restarted, RAID 1 is automatically synchronized. It takes not less than 15 minutes to synchronize RAID 1. Do not power off or restart the system in this process.

7.4 Activating RAID 1

When the SAS hard disk configured with RAID 1 properties is moved from a blade to another blade, this hard disk is identified as in Inactive state. In this case, you need to activate the hard disk or remove RAID 1 in the LSI BIOS configuration program. Otherwise, the hard disk cannot be used.

Activating RAID 1

To activate RAID 1, proceed as follows:

1. In the POST stage of the system, the status of the moved hard disk is displayed as "INACTIVE/OPTIMAL" when the following information is displayed:
 LSI Logic Corp. MPT SAS BIOS
 MPTBIOS-6.12.00.00(2006.10.31)

Copyright 2000-2006 LSI Logic Corp.

Integrated RAID exception detected:

Volume (00.130) is currently in state INACTIVE/OPTIMAL

Enter the LSI Logic Configuration Utility to investigate!

Press <Ctrl>+<C> to start LSI Logic Configuration

Utility...

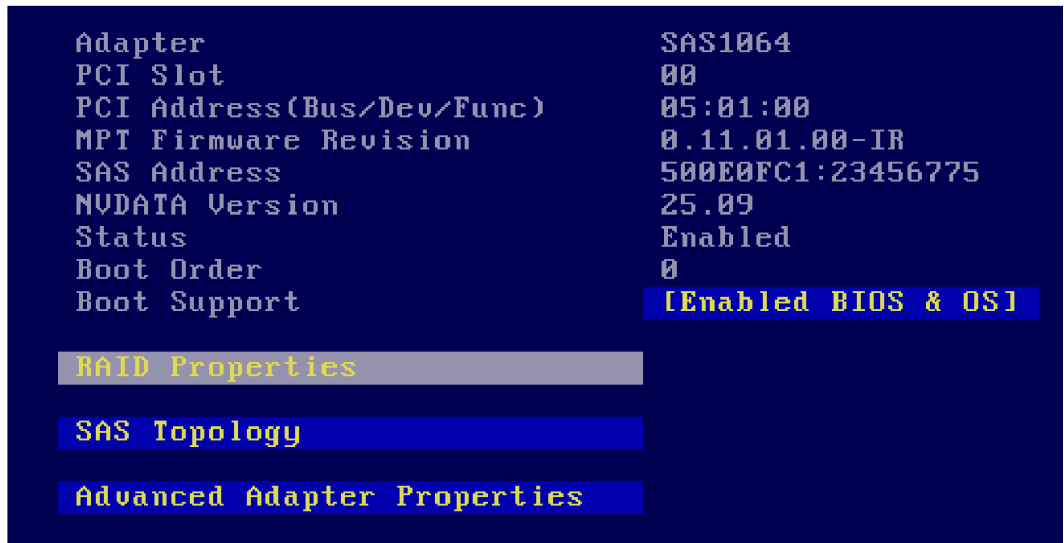
Press <Ctrl>+<C>. The LSI BIOS window is displayed as shown in [Figure 7-15](#).

Figure 7-15 LSI BIOS Window

Adapter	PCI Bus	PCI Dev	PCI Fnc	PCI Slot	FW Revision	Status	Boot Order
SAS1064	05	01	00	00	0.11.01.00-IR	Enabled	0

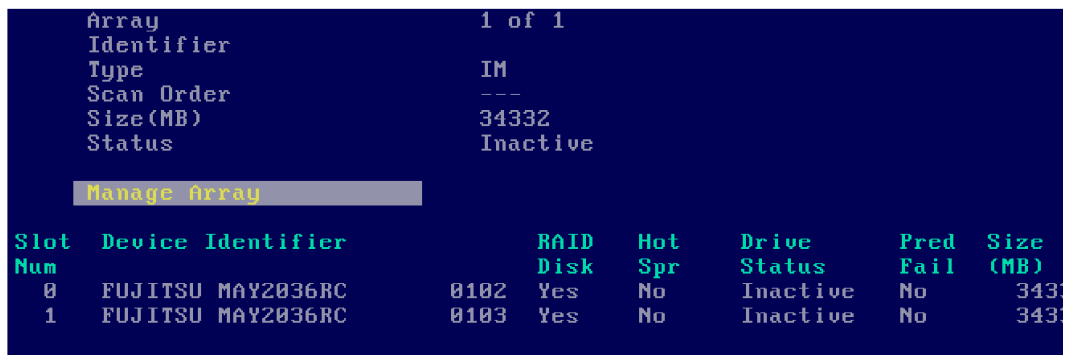
2. Select the currently used SAS controller. Press <Enter>. The Adapterproperty window is displayed as shown in [Figure 7-16](#).

Figure 7-16 Adapter Property Window



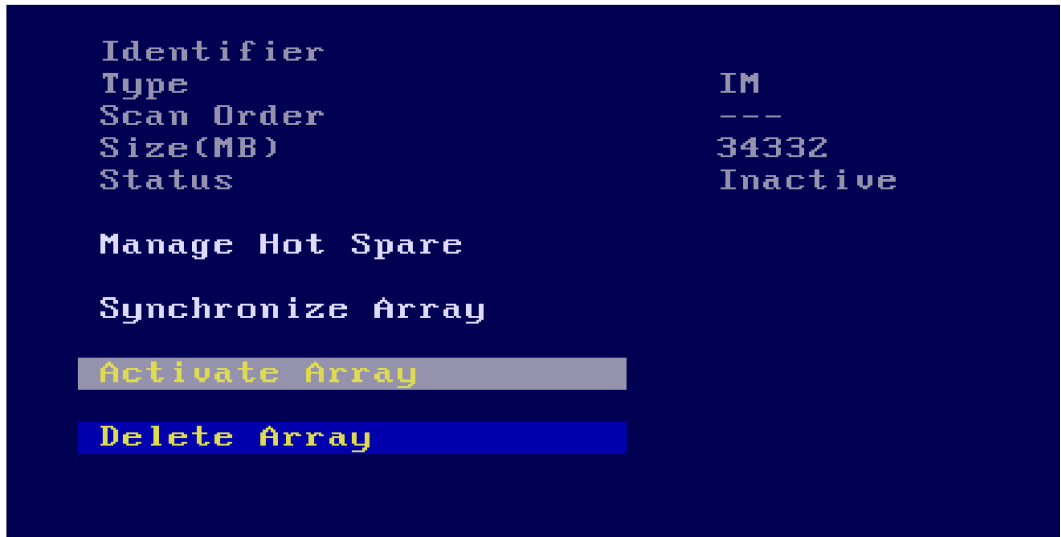
3. Select RAID Properties. Press <Enter>. The array view window is displayed as shown in [Figure 7-17](#).

Figure 7-17 Array View Window



4. Select Manage Array. Press <Enter>. The window for selecting operations is displayed as shown in [Figure 7-18](#).

Figure 7-18 Window for Selecting Operations



5. Select Activate Array. Press <Enter>. The window for confirming whether to activate the array is displayed as shown in [Figure 7-19](#).

Figure 7-19 Window for Confirming Whether to Activate the Array

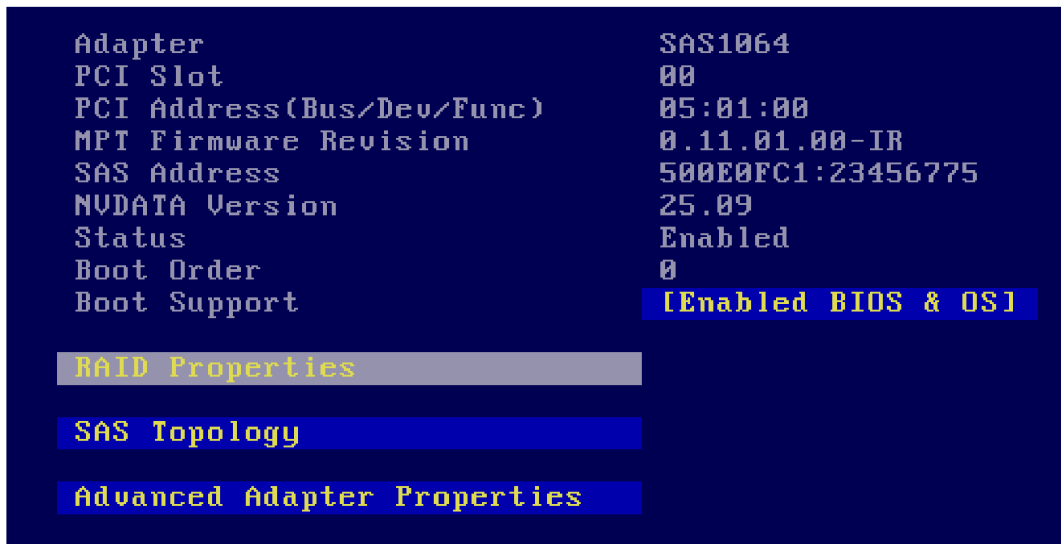
```
Y      Activate array and exit this menu
N      Abandon array activation and exit this menu
```



- Press <Y> to activate the array and exit.
- Press <N> to abandon activation and exit.

6. Press <Y> to activate the array. The Adapter property window is displayed as shown in Figure 7-20.

Figure 7-20 Adapter Property Window



7. Select RAID Properties. Press <Enter>. The array view window is displayed as shown in Figure 7-21. RAID 1 is activated successfully and synchronized automatically. The RAID 1 synchronization progress is displayed in Status.

Figure 7-21 Array View Window

Array	1 of 1						
Identifier	LSILOGICLogical Volume 3000						
Type	IM						
Scan Order	0						
Size(MB)	34332						
Status	2% Syncd						
Manage Array							
Slot Num	Device Identifier		RAID Disk	Hot Spr	Drive Status	Pred Fail	Size (MB)
0	FUJITSU MAY2036RC	0102	Yes	No	Primary	No	34332
1	FUJITSU MAY2036RC	0103	Yes	No	Not Syncd	No	34332

8. Enter <Esc.> Return to the window as shown in Figure 7-22. Select Exit the Configuration Utility and Reboot. Press <Enter>. The system is restarted.

Figure 7-22 Window for Saving the Settings

Are you sure you want to exit?	
Cancel Exit	
Save changes and reboot.	
Discard changes and reboot.	
Exit the Configuration Utility and Reboot	

7.5 Deleting RAID 1

If the two SAS hard disks fail to synchronize because a hard disk is moved, you need to delete all RAID 1 properties and then set and synchronize RAID 1 again.

Deleting RAID 1

To delete RAID 1, proceed as follows:

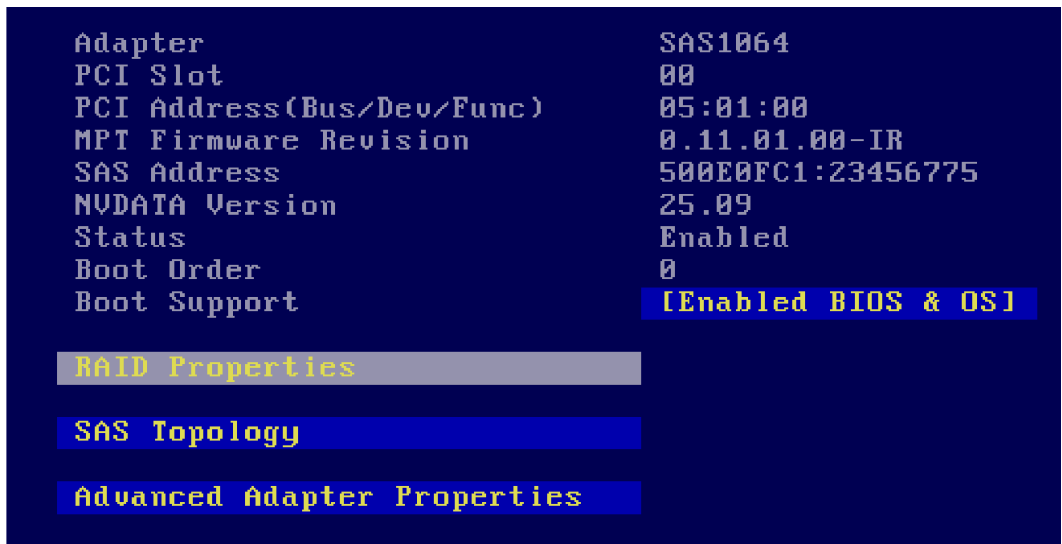
- 1. In the POST stage of the system, the status of the moved hard disk is displayed as "INACTIVE/OPTIMAL" when the following information is displayed:
LSI Logic Corp. MPT SAS BIOS
MPTBIOS-6.12.00.00(2006.10.31)
Copyright 2000-2006 LSI Logic Corp.
Integrated RAID exception detected:
Volume (00.130) is currently in state INACTIVE/OPTIMAL
Enter the LSI Logic Configuration Utility to investigate
Press <Ctrl>+<C> to start LSI Logic Configuration
Utility...
Press <Ctrl>+<C>. The LSI BIOS window is displayed as shown in [Figure 7-23](#).

Figure 7-23 LSI BIOS Window

Adapter	PCI Bus	PCI Dev	PCI Fnc	PCI Slot	FW Revision	Status	Boot Order
SAS1064	05	01	00	00	0.11.01.00-IR	Enabled	0

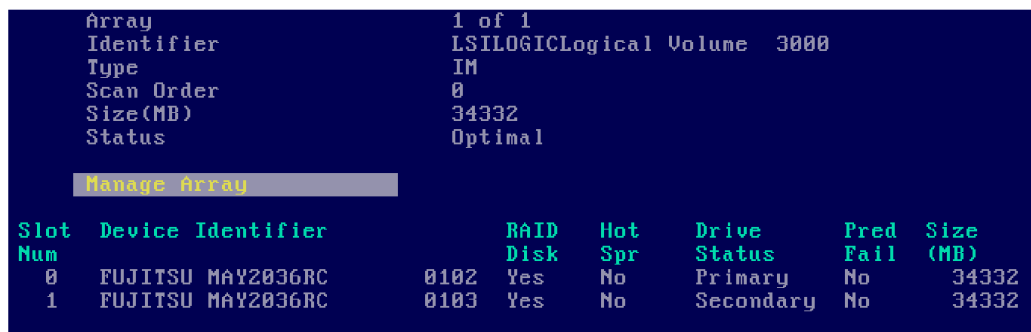
2. Select the currently used SAS controller. Press <Enter>. The Adapter property window is shown in [Figure 7-24](#).

Figure 7-24 Adapter Property Window



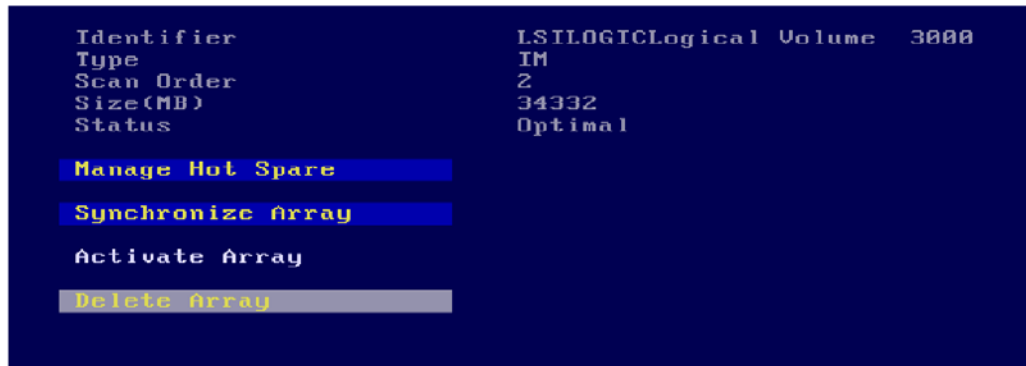
3. Select RAID Properties. Press <Enter>. The array view window is displayed. Inactive is displayed in Status. See [Figure 7-25](#).

Figure 7-25 Array View Window



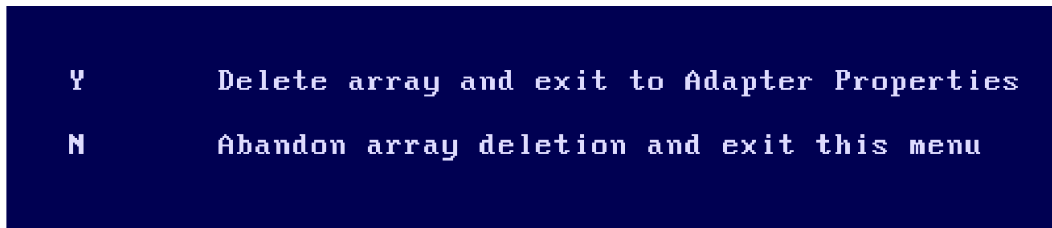
4. Select Manage Array. Press <Enter>. The window for selecting operations is displayed as shown in [Figure 7-26](#).

Figure 7-26 Window for Selecting Operations



5. Select Delete Array. Press <Enter>. The window for confirming whether to delete the array is displayed as shown in [Figure 7-27](#).

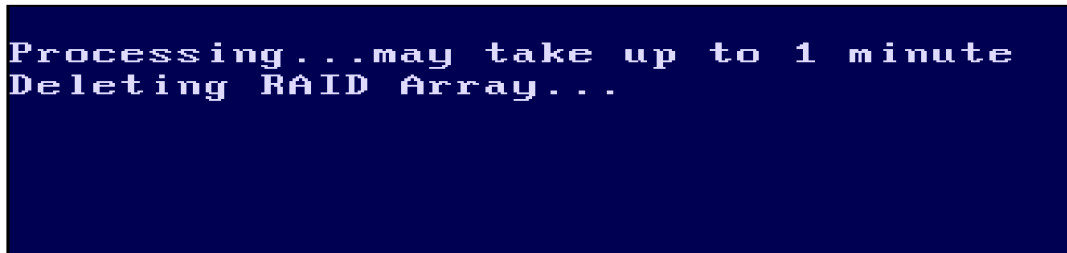
Figure 7-27 Window for Confirming Whether to Delete Array



- Press <Y> to delete the array and exit.
- Press <N> to abandon array deletion and exit.

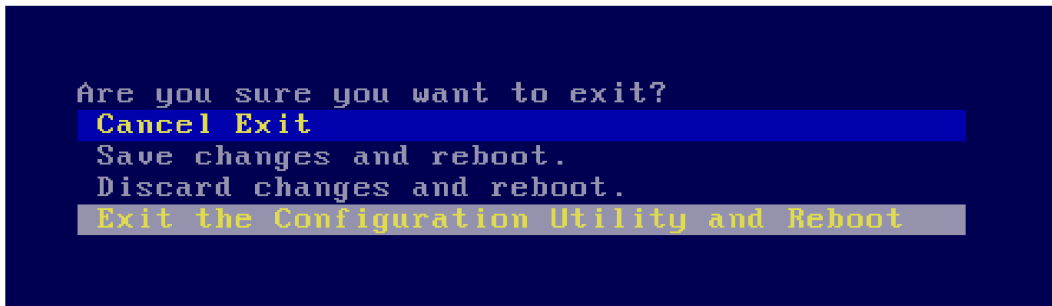
6. Press <Y> to delete the array. The progress window is displayed as shown in [Figure 7-28](#).

Figure 7-28 Progress Window



7. Enter <Esc>. Return to the window as shown in [Figure 7-29](#). Select Exit the Configuration Utility and Reboot. Press <Enter>. The system is restarted.

Figure 7-29 Window for Saving the Settings



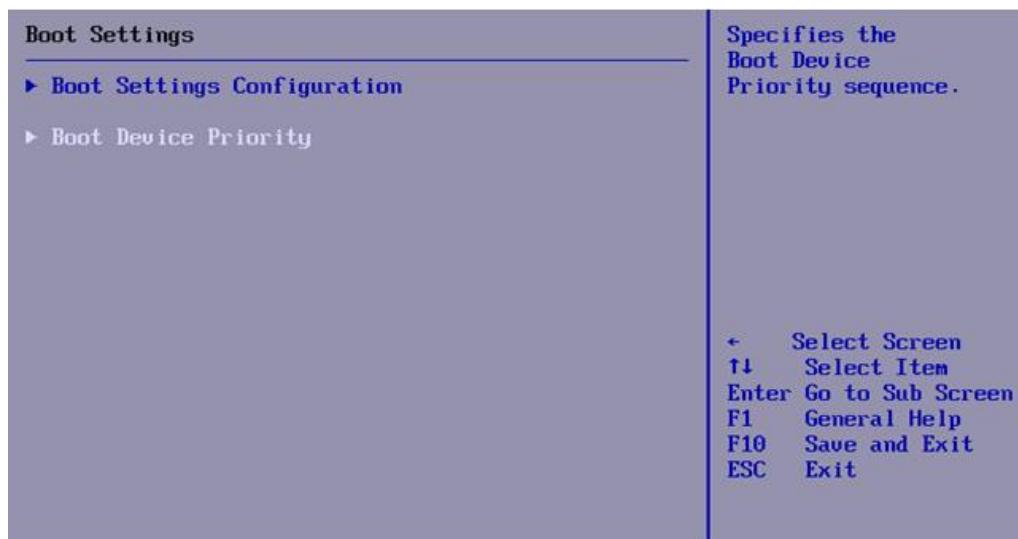
7.6 Distinguishing Hard Disks

Distinguishing Hard Disks

When two hard disks are inserted in the ATCA-7350 and RAID 1 is not set between them, to distinguish them in the BIOS, proceed as follows:

1. Enter <Delete> when the ATCA-7350 is started. The BIOS Settings window is displayed. Select Boot. The Boot Settings window is displayed as shown in [Figure 7-30](#).

Figure 7-30 Boot Settings Window



2. Select Boot Device Priority. Press <Enter>. The Boot Device Priority window is

displayed as shown in [Figure 7-31](#).

Figure 7-31 Boot Device Priority Window



ID00 corresponds to HD0 as shown in [Figure 7-2](#). Therefore, 1st Boot Device indicates HD0, and 2nd Boot Device indicates HD1.

Software Upgrade

8.1 Overview

This chapter describes how to upgrade software on the ATCA-7350 blade under Red Hat Enterprise Linux 5.x.

The following components can be upgraded using the scripts which are part of the software packages:

Table 8-1 Software Upgrade Overview

Component	Upgrade Script
All firmware	upd . sh
BIOS	flash_upd . sh
EEPROM	eprom_upd . sh
FPGA	fw_upd . sh
IPMC firmware	fw_upd . sh
SDR information	fw_upd . sh
SOL firmware	fw_upd . sh

8.2 BIOS Upgrade

The "Flash_upd . sh" is a shell script to be used in a Linux environment for BIOS upgrade. It is part of the cross-atca-7350-bios-x.y.z-rp rpm package. Please ask your local sales representative for obtaining this package. It enables the user to re-program and upgrade the "BOOT" and "USER" flash devices of the ATCA-7350 blade.

NOTICE

Please do not attempt this procedure unless you really want to re-program the device. The BIOS binary image is part of the distribution.

Example: ATCAVxxx.ROM

This binary file must be used to to program the boot flash device.

For safety reasons the `flash_up.sh` script calculates an md5 checksum of the image and compare it with the factory-calculated md5 value in the `<bios_image_file_name>.md5`. If this file is not available, the user is prompted to skip the test. If the checksums do not match, the user is prompted to continue with or without regard to the result of this test.

Upgrade the BIOS

The ATCA-7350 comprises two flashes:

- BIOS boot flash
- BIOS backup flash

This procedure describes how to use the upgrade script.

1. Boot Linux on the ATCA-7350 blade to get a Linux shell prompt.

2. Upgrade the BIOS using the upgrade script to flash the device.

```
$ flash_upd.sh -p <flash partition>
```

For example:

```
$ flash_upd.sh -p 1 -b
```

whereas:

- e clearing CMOS
- b erase/update boot block
- n erase/update NVRAM
- v print version information
- s interactive mode off

8.3 Firmware Upgrade

The "`fw_upd.sh`" file is a shell script to be used in Linux environment. It enables the user to re-program and upgrade the essential firmware of ATCA-7350 blades.

NOTICE

Please do not attempt this unless you are sure you want to re-program the device.

For safety reasons the `fw_upd.sh` script calculates an md5 check sum of the image and compare it with the factory-calculated md5 value in `<fw_image_file_name>.md5`. If this file is not available, the user is prompted to skip the test. If the checksums do not match the user is prompted to continue without regard to the result of this test or not.

8.3.1 FPGA Upgrade

This section describes the upgrade of the FPGA via `fw_upd.sh`. It is part of the `atca-7350-fw-x.y.z-rpm` package. Please ask your local sales representative for obtaining this package.

FPGA Upgrade

Follow the steps below.

1. Boot Linux on the ATCA-7350 blade or on a host blade with network access to a 'rmcp' capable shelf manager hosting the target ATCA-7350 to get a Linux shell prompt.
2. Update the firmware using the update script:

```
$ ./fw_upd.sh [-U <user>] [-P <password>] [-n <slot number>]
[-s] [-t <rmcp-server>] -i <image_tag>
```

Example:

update method via 'rmcp' server

```
$ ./fw_upd.sh -i fpga -t 172.17.0.8
```

default update method using onboard IPMI KCS interface

```
$ ./fw_upd.sh -i fpga -t 172.17.0.8
```

8.3.2 IPMC Firmware Upgrade

This section describes the upgrade of the IPMC Firmware via `fw_upd.sh`. It is part of the `atca-7350-fw-x.y.z-rpm` package. Please ask your local sales representative for obtaining this package.

NOTICE

The following sections describes the firmware image only.

IPMC Upgrade

Follow the steps below.

1. Boot Linux on the ATCA-7350 blade or on a host blade with network access to a 'rmcp' capable shelf manager hosting the target ATCA-7350 to get a Linux shell prompt.
2. Upgrade the firmware using the upgrade script:

```
$ ./fw_upd.sh [-U <user>] [-P <password>] [-n <slot number>] [-s] [-t <rmcp-server>] -i <image_tag>
```

 Example:
 update method via 'rmcp' server

```
$ ./fw_upd.sh -i ipmc_fw -t 172.17.0.8
```

 default update method using onboard IPMI KCS interface

```
$ ./fw_upd.sh -i ipmc_fw
```

8.3.3 SDR Information Upgrade

This section describes the upgrade of SDR and FRU information via `fw_upd.sh`. It is part of the `atca-7350-fw-x.y.z-rpm` package. Please ask your local sales representative for obtaining this package.

SDR and FRU Upgrade

Follow the steps below.

1. Boot Linux on the ATCA-7350 blade or on a host blade with network access to a 'rmcp' capable shelf manager hosting the target ATCA-7350 to get a Linux shell prompt.
2. Upgrade the firmware using the update script:

```
$ ./fw_upd.sh [-U <user>] [-P <password>] [-n <slot number>]
[-s] [-t <rmcp-server>] -i <image_tag>
```

 Example:
 update method via 'rmcp' server

```
$ ./fw_upd.sh -i fru_sdr -t 172.17.0.8
```

 default update method using onboard IPMI KCS interface

```
$ ./fw_upd.sh -i fru_sdr
```

8.3.4 SOL Firmware Upgrade

This section describes the SOL firmware upgrade via `fw_upd.sh`. It is part of the `atca-7350-fw-x.y.z-rpm` package. Please ask your local sales representative for obtaining this package.

SOL Firmware Upgrade

Follow the steps below.

1. Boot Linux on the ATCA-7350 blade or on a host blade with network access to a 'rmcp' capable shelf manager hosting the target ATCA-7350 to get a Linux shell prompt.
2. Upgrade the firmware using the update script:

```
$ ./fw_upd.sh [-U <user>] [-P <password>] [-n <slot-
number>] [-s] [-t <rmcp-server>] -i <image_tag>
```

 Example:
 update method via 'rmcp' server

```
$ ./fw_upd.sh -i sol_fw -t 172.17.0.8
```

default update method using onboard IPMI KCS interface

```
$ ./fw_upd.sh -i sol_fw
```

8.4 EEPROM Upgrade

The "eeprom_upd.sh" file is a shell script to be used in Linux environment for EEPROM upgrade. It is part of the atca-7350-eeprom-x.y.z-rpm package. Please ask your local sales representative for obtaining this package. It enables the user to re-program and upgrade the essential EEPROM images of ATCA-7350 blades.

NOTICE

Please do not attempt this unless you are sure you want to re-program the device.

The EEPROM image files are part of the distribution. For safety reasons the eeprom_upd.sh script calculates an md5 check sum of the image and compare it with the factory-calculated md5 value in <eeprom_image_file_name>.md5. If this file is not available, the user is prompted to skip the test. If the checksums do not match the user is prompted to continue without regard to the result of this test or not.

EEPROM Upgrade

Follow the steps below.

1. Boot Linux on ATCA-7350 so that you will get a Linux shell prompt.
2. Update the EEPROM using the upgrade script:


```
$ ./eeprom_upd.sh [-s] [-d] -i <image_tag>
```

 for displaying "update channel" differences only:


```
$ ./fw_upd.sh -d -i upch
```

for "update channel" upgrade:
 \$./fw_upd.sh -i upch

NOTICE

Base Channel
 The base channel cannot be upgraded. It is only readable.

8.5 Automated Firmware Upgrade

The "upd.sh" file is a shell script to be used in Linux environment for automated firmware upgrade. It is part of the atca-7350-upgrade-x.y.z.rpm package. Please ask your local sales representative for obtaining this package. It enables the user to re-program and upgrade all essential firmware parts of ATCA-7350 blades automatically according to a certain software version.

NOTICE

Please do not attempt this unless you are sure you want to re-program the device.

The upgrade package depends on several individual firmware image packages. This script updates the payload of the ATCA-7350 blade. Active SOL sessions to the upgraded ATCA-7350 blade are terminated after the upgrade.

Automated Firmware Upgrade

Follow these steps to automatically upgrade firmware.

1. Boot Linux on the ATCA-7350 blade to get a Linux shell prompt.

2. Perform the upgrade.

```
$ ./upd.sh [-U <user>] [-P <password>] [-n <slot-number>]
[-s] [-t <rmcp-server>]
```

Example:

update method using 'rmcp' server for upgrading parts of the FW

```
$ ./upd.sh -t 172.17.0.8
```

default update method (using onboard IPMI KCS interface for upgrading parts of the FW)

```
$ ./upd.sh
```

Addressing

9.1 PCI Configuration Map

The following PCI Configuration Map lists all PCI devices and the bus on which they reside. Note the bus numbers that appear in the table are offset if additional devices are installed in the mezzanine card connector. The bus numbers in parentheses indicate the bus number when no additional mezzanine cards are installed.

Table 9-1 PCI configuration map

Device	PCI Bus #	PCI Device #	PCI Function #	PCI Device ID	Function Description
MCH	0	0	0	8086/25D8	ESI (PCI Express Port 0)
MCH	0	2	0	8086/25E2	PCI Express Port 2
MCH	0	3	0	8086/25E3	PCI Express Port 3
MCH	0	4	0	8086/25E4	PCI Express Port 4
MCH	0	5	0	8086/25E5	PCI Express Port 5
MCH	0	6	0	8086/25E6	PCI Express Port 6
MCH	0	7	0	8086/25E7	PCI Express Port 7
MCH	0	16	0	8086/25F0	Processor Bus, Boot, Interrupt, System Address
MCH	0	16	1	8086/25F0	Address Mapping, Memory Control, Error Logs
MCH	0	16	2	8086/25F0	FSB Error Registers
MCH	0	21	0	8086/25F5	Memory Map, Error Flag/Mask, RAS, Channel Control for FB-DIMM Branch 0
MCH	0	22	0	8086/25F6	Memory Map, Error Flag/Mask, RAS, Channel Control for FB-DIMM Branch 1
ESB2	0	28	0	8086/2690	PCI-to-PCI Bridge
ESB2	0	29	0	8086/2688	USB UHCI Controller #1
ESB2	0	29	1	8086/2689	USB UHCI Controller #2
ESB2	0	29	2	8086/268A	USB UHCI Controller #3

Table 9-1 PCI configuration map (continued)

Device	PCI Bus #	PCI Device #	PCI Function #	PCI Device ID	Function Description
ESB2	0	29	3	8086/268B	USB UHCI Controller #4
ESB2	0	29	7	8086/268c	USB EHCI Controller
ESB2	0	30	0	8086/244E	PCI-to-PCI Bridge
ESB2	0	31	0	8086/2670	LPC Controller
ESB2	0	31	3	8086/269B	SMBUS Controller
ESB2	1	0	0	8086/3500	PCI Express Upstream port
ESB2	1	0	3	8086/350C	PCI Express-to-PCI-X Bridge
ESB2	2	0	0	8086/3510	PCI Express downstream port 1
ESB2	2	1	0	8086/3514	PCI Express downstream port 2
Chipset	3	0	0	8086/1060	82571 LAN0 Controller
Chipset	5	1	0	1000/0050	SAS 1064 Controller
ESB2	6	0	0	8086/1098	LAN0 Controller
ESB2	6	0	1	8086/1098	LAN1 Controller
Chipset	11	0	0	1166/0103	Broadcom LAN Controller Bridge
Chipset	12	4	0	14E4/1678	Broadcom LAN0 Controller
Chipset	12	4	1	14E4/1678	Broadcom LAN1 Controller
Chipset	13	0	0	18CA/0020	XGI Z9 VGA Controller

9.2 Configuration Registers

9.2.1 Configuration Address Register MCH CONFIG_ADDRESS

Table 9-2 I/O Address: 0x0CF8 Accessed as a Dword

Bit	Description
31	Configuration Enable (CFGE): When this bit is set to 1, accesses to PCI configuration space are enabled. When this bit is reset to 0, accesses to PCI configuration space are disabled.
30:24	Reserved (These bits are read only and have a value of 0).
23:16	Bus Number: Contains the bus number being targeted by the configuration cycle.
15:11	Device Number: Selects one of the 32 possible devices per bus.
10:8	Function Number: Selects one of eight possible functions within a device.
7:2	Register Number: This field selects one register within a particular Bus, Device, and Function as specified by the other fields in the Configuration Address Register. This field is mapped to A[7:2] during HI_A-D Configuration cycles.

Default Value: 0x00000000

Access: Read/Write

Size: 32 bits

CONFIG_ADDRESS is a 32-bit I/O register that can only be accessed as a Dword. A byte or word reference passes through the Configuration Address Register and hub link interface HI_A onto the PCI_A bus as an I/O cycle. The CONFIG_ADDRESS register contains the Bus Number, Device Number, Function Number, and Register Number for which a subsequent PCI configuration access is intended. This register is defined by the PCI Bus specification.

Table 9-3 Configuration address register bit assignments

Bit	31	30 24	23 16	15 11	10 8	7 2	1 0	
	0	R	0	0	0	0	R	Default

9.2.2 Configuration Data Register MCH CONFIG_ADDRESS

I/O Address: 0x0CFC

Default Value: 0x00000000

Access: Read/Write

Size: 32 bits

CONFIG_DATA is a 32-bit read/write window into the PCI configuration space. The portion of configuration space that is referenced by CONFIG_DATA is determined by the contents of CONFIG_ADDRESS.

Table 9-4 Configuration data register bit assignments

Bit	Description
31:0	Configuration Data Window (CDW): If bit 31 of CONFIG_ADDRESS is set to 1, any I/O access to the CONFIG_DATA register is mapped to configuration space pointed to by the contents of CONFIG_ADDRESS.

9.3 I/O Address Assignments

I/O port addresses are divided among the on-board devices. Please refer to the respective device specifications for specific I/O address usage. These devices include the ESB2, MCH, 82571 Ethernet controller, XGI Z9 VGA controller, Broadcom 5715 Ethernet controller, LSI 1064 SAS controller.

The MCH uses only I/O ports 0xCF8 and 0xCFC for PCI configuration cycle generation. These registers are shown in "Configuration Address Register MCH CONFIG_ADDRESS" on section 3.2.1 and "Configuration Data Register MCH CONFIG_ADDRESS" on section 3.2.2. The ESB2 forwards applicable I/O transactions to its attached PCI buses. The "I/O Address Cross-references" table lists document references to I/O descriptions.

Table 9-5 I/O address cross-references

Device	Document Title/Number	Section/Page/Table
ESB2	ESB2 EDS	Section 11.4, Table 11-4
MCH	Intel® 5000 Chipset MCH EDS	Section 3.5 Table 3-5, 3-6 and Section 3.6 Table 3-7

9.4 Memory Map

The Intel® 5000P chipset supports 36 bits of memory address space. Internally Intel® 5000P chipset carries 40 bits of address into various memory controller components. The processors designed for Intel® 5000P chipset, support only 36 bits of memory addressing and 16 bits of addressable I/O space. However internally the MCH supports 40 bits and several of the MCH memory configuration registers require 40 bit address programming.

Refer to the Intel 5000P Data Sheet.

The MCH provides the capability to re-claim the physical memory overlapped by memory-mapped I/O devices, BIOS, and I/O APICs that reside just below 4 GByte. This memory may be re-mapped to physical memory at the address defined by the TOLM register. The detailed memory system address map, please refer to Intel® 5000P/5000V/5000Z Chipset Memory Controller Hub (MCH) Datasheet.

Troubleshooting

A.1 Overview

This chapter describes:

- Precautions
- Principles
- Resources
- LED Display Exceptions
- Power-On Startup Exceptions
- OS Exceptions

A.2 Precautions

NOTICE

Before you remove faulty ATCA-7350 suite, be familiar with the Server System Safety Information shipped with the shelf.

For details on the precautions taken when you operate the ATCA-7350 suite, see [Precautions on page 32](#).

A.3 Principles

During troubleshooting, follow the principles:

- Diagnose the outside and then the inside.
In troubleshooting, remove the outside faults, such as power interruption and the faults of the peer device.
- Diagnose the network and then the NEs (network Elements).
According to the network topology, analyze whether the network environment is normal and the interconnected device is faulty. Locate the NE to which the fault occurs.

- Diagnose the high speed part and then the low speed part.
From the alarm signal stream, the alarm of the high speed signal often causes the alarm of the low speed signal. Therefore, remove the fault of the high speed part first.
- Analyze the alarm of high level and then that of low level.
Analyze the alarm of high level, such as critical alarm or major alarm. Then, analyze the alarm of low level, such as minor alarm or warning alarm.

A.4 Resources

You can use the following resources for troubleshooting:

- LEDs
The ATCA-7350 suite provides the following LEDs:
 - Out of Service (OOS) LED
 - In Service (IS) LED
 - Attention (ATN) LED
 - Hotswap (H/S) LED
 - Hard Disk (HDD) LEDIn addition, the external GE daughter card provides network port LEDs (for two Ethernet interfaces). The external FC daughter card provides FC status LEDs (for two FC interfaces). You can monitor the LEDs to diagnose the current status of the ATCA-7350 suite. For details on the LEDs of the ATCA-7350 suite, see [LEDs on page 76](#).
- Generating error codes and alarm signals
Error codes and alarm signals help you to further locate and remove the faults.

A.5 Contacting Artesyn Embedded Technologies for Technical Support

If a problem persists after you handle it under the guidance of this document, contact the local office or Customer Service Center of Artesyn Embedded Technologies to obtain timely technical support. Before you report the problem to Artesyn engineer, collect the following information:

- Detailed name and address of the customer
- Contact person and telephone number
- Time when the fault occurred
- Detailed description on the fault
- Device type and software version
- Measures taken after the fault occurred and related results
- Problem level and required solution time

Contact your designated sales/service contact.

A.6 LED Display Exceptions

A.6.1 LEDs Are Off

Description

All LEDs on the ATCA-7350 face plate are off, including the OOS, IS, ATN, H/S, and HDD LEDs. In addition the ATCA-7350 displays no information on the video screen if attached via the RTM.

Solution

To solve the problem, proceed as follows:

1. Check that the ATCA-7350 is properly inserted in the shelf.
2. Check whether the -48 V DC inputs to the shelf are normal.

3. If the PEM of the ATCA-7350 is damaged, replace the ATCA-7350.
4. Contact Artesyn technical support engineer to load the BMC software again.

A.7 Power-On Startup Exceptions

Description

After you close the upper and lower ejector handles of the ATCA-7350, the HOTSWAP LED blinks (blue) and no information is displayed on the console or monitor.

Solution

To solve the problem, proceed as follows:

1. Check that the ATCA-7350 is properly inserted in the shelf and that its ejector handles are fully closed.
2. Check that the pointers of the ATCA-7350 rear part that is connected to the backplane are not damaged or deformed.
3. Check the power supply of the shelf. If the power is low, the ATCA-7350 cannot be powered on through the shelf manager.
4. Check whether the shelf manager is firmly inserted in the proper position and works well. Make sure that at least one shelf manager is present in the shelf and works well.
5. Contact Artesyn technical support engineer to check the IPMC software.

A.8 Component Exceptions

A.8.1 Component Is Unavailable

Description

The optional component that is newly installed cannot be used.

Solution

To solve the problem, proceed as follows:

1. Make sure that this optional component is suitable for the ATCA-7350 suite.
For details, see [Optional Components Supported by the ATCA-7350 on page 39](#).
2. Make sure that the optional component is installed properly.
3. Make sure that any installed device or cable is not loose.
4. Re-install the optional component that is installed just now.
5. Replace the optional component that is installed just now.
For details, see [Installing Blade Accessories on page 38](#).

A.8.2 Number of DIMMs Is Inconsistent

Description

The number of the displayed system DIMMs is less than that of the installed physical DIMMs.

Solution

To solve the problem, proceed as follows:

1. Make sure that all DIMMs of correct type are installed in the slots properly.
2. Check for consistency of the size, rank and frequency of the installed DIMMs.
3. Re-install the DIMMs.
For details, see [Installing the DIMM on page 42](#).
4. Replace the DIMM.
For details, see [Replacing the DIMM on page 44](#).
5. If the problem persists, replace the ATCA-7350.
For details, see [Installing and Removing the Blade on page 51](#).

A.9 Power Exceptions

A.9.1 ATCA-7350 Cannot Be Started

Description

The ATCA-7350 cannot be started.

Solution

To solve the problem, proceed as follows:

1. Make sure that the shelf is powered on properly.
For details, refer to the respective system documentation.
2. If you install an optional component on the ATCA-7350, remove the optional component and then restart the ATCA-7350.
3. Start another ATCA-7350 in the shelf. If it can be started normally, replace the faulty ATCA-7350.
4. If the problem persists, see [Uncertain Exceptions on page 183](#).

A.9.2 ATCA-7350 Automatically Shuts Down

Description

The ATCA-7350 automatically shuts down without any explicit reason.

Solution

To solve the problem, proceed as follows:

1. Make sure that each component of the shelf is installed properly. For details, refer to the respective system documentation. If some components are not installed or are installed improperly, the ATCA-7350 may automatically shut down.
2. Replace the ATCA-7350.

A.10 Peripheral Exceptions

A.10.1 Keyboard Cannot Be Used

Description

All keys or part keys on the keyboard cannot be used.

Solution

To solve the problem, proceed as follows:

1. Make sure that the cable of the keyboard is connected properly and firmly and that the cable of the keyboard and that of the mouse are not connected reversely.
2. Make sure that the ATCA-7350 is powered on.
For details, see [Blade Power-On on page 53](#).
3. Replace the keyboard. For details, refer to the document shipped with the keyboard that you use.
4. Replace the RTM-ATCA-7x50 that works with the ATCA-7350.
For details, see [Removing the RTM-ATCA-7x50 on page 56](#).

A.10.2 Mouse Cannot Be Used

Description

The mouse cannot be used.

Solution

To solve the problem, proceed as follows:

1. Make sure that the cable of the mouse is connected properly and firmly and that the cable of the mouse and that of the keyboard are not connected reversely.
2. Make sure that the mouse works well on other ATCA-7350s.
3. Make sure that the mouse has been properly installed with drivers.
4. Make sure that the ATCA-7350 is powered on and started normally.

5. Replace the mouse.
For details, refer to the document shipped with the mouse that you use.

A.10.3 Monitor Remains Dark

Description

When you connect the monitor to the running ATCA-7350 or start some applications of the ATCA-7350, the monitor remains dark.

Solution

To solve the problem, proceed as follows:

1. Make sure that the power cable of the monitor is connected properly.
2. Make sure that the monitor is connected to the RTM-ATCA-7x50 properly and firmly.
3. Make sure that you have turned on the monitor and properly adjusted the luminance and contrast control.
4. Power off the ATCA-7350 and then power it on again.
5. Replace the monitor or ATCA-7350. For details on how to replace the monitor, refer to the document shipped with the monitor that you use.
For details on how to replace the ATCA-7350, see [Installing and Removing the Blade on page 51](#).

A.10.4 Monitor Display Is Abnormal

Description

Jittering, unreadable, rolling or twisted image is displayed on the monitor screen.

Solution

To solve the problem, proceed as follows:

1. If monitor self-test indicates that the monitor works normally, consider the position of the monitor apart. The magnetic field around other devices (such as transformers, electronic devices, fluorescent lights, and other monitors) may cause screen jitters, image fluctuation, or unreadable, rolling or twisted image.
2. When you move a color monitor, the color of the screen may be distorted. Move the device and monitor. Make sure that the distance between them is at least 305 mm.
3. Turn on the monitor. If the problem persists, replace the monitor or ATCA-7350. For details on how to replace the monitor, refer to the document shipped with the monitor that you use.
For details on how to replace the ATCA-7350, see [Installing and Removing the Blade on page 51](#).

A.10.5 No Information Is Displayed on the Monitor

Description

The ATCA-7350 LEDs indicate normal operation and no alarm is generated. However, no information is displayed on the monitor.

Solution

To solve the problem, proceed as follows:

1. Make sure that:
 - The RTM-ATCA-7x50 is inserted properly.
 - The upper and lower ejector handles are fully closed.
 - The LEDs are in normal state.
2. Make sure that the cable connectors of the monitor contact well.
3. Check whether the DIMM is inserted.
4. If the DIMM is inserted, check whether it is inserted in the memory slot firmly.
5. If the problem persists, replace the DIMM with a new one.
For details, see [Replacing the DIMM on page 44](#).

A.11 Other Exceptions

A.11.1 USB Interface Cannot Be Used

Description

The USB interface cannot be used.

Solution

To solve the problem, proceed as follows:

1. Make sure that the USB device drivers are installed properly.
2. Make sure that the OS that you use supports the USB device.

A.11.2 Network Connection Is Faulty

Description

One or more ATCA-7350 cannot communicate with the external network.

Solution

To solve the problem, proceed as follows:

1. Make sure that the network module that you use is installed in the server system and works normally. For details, refer to the respective system documentation.
2. The setting in the network module is suitable for the ATCA-7350. For details, refer to the respective system documentation.
3. If the problem persists, see [Uncertain Exceptions on page 183](#).

A.11.3 A Fault Occurs in Software

Description

A fault may occur in software.

Solution

To solve the problem, proceed as follows:

1. Check whether the problem is caused by software fault.
2. Check whether the ATCA-7350 has the minimum memory required by the software.
3. Check whether the design of the software is applied to the server.
4. Check whether other software can run on the ATCA-7350.
5. Check whether this software can run on other ATCA-7350s.
6. If an error message is generated when you use the software, refer to the document shipped with the software to get the details on the message and solution.
7. Contact Artesyn Embedded Technologies technical support engineer to handle the problem.

A.12 Uncertain Exceptions

When you diagnose the faulty ATCA-7350, check whether the ATCA-7350 or the shelf has a fault.

- If all ATCA-7350s have the same symptom, it is very likely that a fault occurs in the shelf. For details, refer to the respective system documentation.
- If the shelf has multiple ATCA-7350s and one ATCA-7350 is faulty, troubleshoot the faulty ATCA-7350.

If you think that the fault is caused by software, see [A Fault Occurs in Software on page 182](#).

Damaged CMOS data or BIOS codes may cause some uncertain problems. To reset the CMOS data, contact Artesyn Embedded Technologies for technical support. For detailed contact methods, see [Contacting Artesyn Embedded Technologies for Technical Support on page 175](#).

Check whether the PEM of the shelf works well. If the PEM works well but the problem persists after you install the ATCA-7350 again, proceed as follows:

1. Make sure that the ATCA-7350 is inserted in the proper slot of the shelf. The ATCA-7350 is installed in one of the slots 1-6 or 9-14 at the front side of the shelf.
2. Make sure that the external cables that the ATCA-7350 and its RTM use are properly connected.

3. Power off the ATCA-7350 and remove it from the shelf.
4. Remove or disconnect the following devices (one at a time) until you find the fault. Re-install and power on the ATCA-7350.

- a. Hard disk drive

- b. DIMM

The hardware configurations required at least to start the ATCA-7350 include:

- Main board
- One CPU
- One 512 MB DIMM
- One hard disk
- Available shelf



When the ATCA-7350 is configured with only one DIMM, the DIMM can be installed in DIMM interface 0 only. For the position of the DIMM interface, see [Figure 2-3](#).

5. Install and power on the ATCA-7350. If the problem persists, replace the following components in order:
 - a. Hard disk
 - b. DIMM
 - c. CPU
 - d. Main board
6. If the ATCA-7350 passes all system tests, a fault may occurs in the external network connection.

A.13 POST Code Checkpoints

POST code checkpoints are the largest set of checkpoints during the BIOS pre-boot process.

Table A-1 lists the types of checkpoints that may occur during the POST stage of the BIOS and related solutions.



To clear the CMOS RAM or upgrade the BIOS, contact Artesyn for technical support.

Table A-1 POST code checkpoints

Checkpoint	Description	Solution
03	Disable NMI, parity, video for EGA, and DMA controllers. Initialize: • BIOS, POST, and runtime data area • BIOS modules on POST entry and GPNV area • CMOS	1. Restart the ATCA-7350. 2. Replace the ATCA-7350.
04	Check the CMOS diagnostic byte to determine whether battery power is proper and whether the CMOS checksum is proper. Verify the CMOS checksum by reading the storage area. If the CMOS checksum is wrong, update CMOS with power-on default values and clear passwords. Initialize data variables that are based on CMOS setup questions.	1. Restart the ATCA-7350. 2. Clear CMOS and then restart the ATCA-7350. 3. Replace the ATCA-7350.
05	Initialize the interrupt controlling hardware and interrupt vector table.	1. Restart the ATCA-7350. 2. Replace the ATCA-7350.
06	Initialize the system timer. Initialize the handler for system timer interrupt.	

Table A-1 POST code checkpoints (continued)

Checkpoint	Description	Solution
08	Initialize the keyboard controller (KBC).	1. Restart the ATCA-7350 2. Replace the ATCA-7350.
C0	Early CPU initialization starts.	
C1	Set the boot processor initialization information.	
C2	Set the boot processor initialization for POST.	
C5	List and set application processors.	
C6	Re-enable cache for the boot processor.	
C7	Exit the early CPU initialization.	
0A	Initialize the 8042 compatible KBC.	1. Restart the ATCA-7350. 2. Replace the ATCA-7350.
0B	Detect the presence of PS/2 mouse.	1. Restart the ATCA-7350 2. Replace the PS/2 mouse and restart the ATCA-7350. 3. Replace the ATCA-7350.
0C	Detect the presence of the keyboard in KBC port.	
0E	Test and initialize different input devices. Also, update kernel variables. Disable handler for IRQ1 installation. Uncompress all available languages, BIOS logo, and silent logo modules.	1. Restart the ATCA-7350. 2. Upgrade the BIOS and restart the ATCA-7350. 3. Replace the ATCA-7350.
13	Initialize early POST chipset registers.	1. Restart the ATCA-7350. 2. Replace the ATCA-7350.
24	Uncompress and initialize the specific BIOS modules of any platform.	1. Restart the ATCA-7350. 2. Upgrade the BIOS and restart the ATCA-7350. 3. Replace the ATCA-7350.
30	Initialize system management interrupt.	1. Restart the ATCA-7350. 2. Replace the ATCA-7350.
2C	Initialize different devices. Detect and initialize the video adapter that is installed in the system and has optional ROMs.	
2E	Initialize all output devices.	

Table A-1 POST code checkpoints (continued)

Checkpoint	Description	Solution
31	Allocate memory for the ADM module and uncompress it. Control the ADM module for initialization. Initialize the language and font modules for ADM. Activate the ADM module.	1. Restart the ATCA-7350. 2. Upgrade the BIOS and restart the ATCA-7350. 3. Replace the ATCA-7350.
33	Initialize the silent boot module. Set the window for displaying text information.	1. Restart the ATCA-7350. 2. Replace the ATCA-7350.
37	Display the sign-on message, CPU information, setup key message, and any OEM specific information.	
39	Initializes DMA controller 1 and DMA controller 2.	
3A	Initialize RTC date and time.	1. Restart the ATCA-7350. 2. Clear CMOS RAM and then restart the ATCA-7350. 3. Replace the ATCA-7350.

Table A-1 POST code checkpoints (continued)

Checkpoint	Description	Solution
3B	Test for total memory installed in the system. Also, Check for the Delete or ESC key to limit memory test. Display total memory in the system.	1. Restart the ATCA-7350. 2. Replace the ATCA-7350.
3C	Initialize Mid POST chipset registers.	
40	Detect different devices (such as parallel ports, serial ports, and coprocessor in CPU) successfully installed in the system and update the BDA, EBDA, and so on.	
50	Program the memory hole or any kind of implementation that needs an adjustment in system RAM size if needed.	
52	Update CMOS RAM memory size from the memory found in memory test. Allocate memory for the extended BIOS data area from base memory.	
60	Initialize NumLock status and program the keyboard typematic rate.	
75	Initialize Int-13 and prepare for IPL detection.	
78	Initialize IPL devices controlled by BIOS and optional ROMs.	1. Restart the ATCA-7350. 2. Upgrade the BIOS and restart the ATCA-7350. 3. Replace the ATCA-7350.
7A	Initialize remaining optional ROMs.	
7C	Generate and write contents of ESCD in NVRam.	1. Restart the ATCA-7350. 2. Check whether the BIOS write protection is enabled. If it is enabled, disable it and restart the ATCA-7350. 3. Replace the ATCA-7350.
84	Record errors encountered during POST.	1. Restart the ATCA-7350. 2. Replace the ATCA-7350.

Table A-1 POST code checkpoints (continued)

Checkpoint	Description	Solution
85	Display errors to the user and get the user response for errors.	Handle the fault according to the prompts displayed on the terminal.
8C	Initialize late POST chipset registers.	1. Restart the ATCA-7350. 2. Replace the ATCA-7350.
8D	Build ACPI tables (if ACPI is supported).	
8E	Program peripheral parameters. Enable or disable NMI as selected.	
90	Initialize late POST of system management terminal.	
A1	Perform clean-up work needed before booting to the OS.	1. Restart the ATCA-7350. 2. Replace the ATCA-7350.
A2	Take care of runtime image preparation for different BIOS modules. Initialize the IRQ routing table. Prepare the runtime language module. Disable the system configuration display if needed.	
A4	Prepare the runtime language module.	
A7	Display the system configuration screen if enabled. Initialize the CPU's system configuration screen before booting, which includes the programming of the MTRR's.	
A8	Prepare CPU for OS booting, including final MTRR values.	1. Restart the ATCA-7350. 2. Replace the CPU. 3. Replace the ATCA-7350.
AC	End POST initialization of chipset registers.	1. Restart the ATCA-7350. 2. Replace the ATCA-7350.

A.14 DIM Code Checkpoints

The device initialization manager (DIM) gets control at various time during BIOS POST to initialize different system buses.

Table A-2 lists the checkpoints where the DIM module is accessed and solutions.

Table A-2 DIM code checkpoints

Checkpoint	Description	Solution
2A	Initialize different buses and perform the following functions: ● Reset, Detect, and Disable (function 0) ● Static Device Initialization (function 1) ● Boot Output Device Initialization (function 2) Function 0 disables all device nodes, PCI devices, and PnP ISA cards. It also assigns PCI bus numbers. Function 1 initializes all static devices that include manually configured onboard peripherals, memory and I/O decode windows in PCI-PCI bridges, and noncompliant PCI devices. Static resources are also reserved. Function 2 searches for and initializes any PnP, PCI, or AGP video devices.	1. Restart the ATCA-7350. 2. Replace the ATCA-7350.
38	Initialize different buses and perform the following functions: ● Boot Input Device Initialization (function 3) ● IPL Device Initialization (function 4) ● General Device Initialization (function 5) Function 3 searches for and configures PCI input devices and detects whether the system has the standard keyboard controller. Function 4 searches for and configures all PnP and PCI boot devices. Function 5 configures all onboard peripherals that are set to an automatic configuration and configures all remaining PnP and PCI devices.	

A.15 ACPI Code Checkpoints

ACPI checkpoints are displayed when an ACPI capable OS either enters or leaves a sleep state.

Table A-3 lists the types of checkpoints that may occur during ACPI sleep or wake states and solutions.

Table A-3 ACPI code checkpoints

Checkpoint	Description	Solution
AC	First ASL check point. Indicate that the system is running in ACPI mode.	1. Restart the ATCA-7350. 2. Install the OS and drivers.
AA	Indicate that the system is running in ACPI mode.	
01, 02, 03, 04, 05	Enter sleep state S1, S2, S3, S4, or S5.	1. Restart the ATCA-7350. 2. Install the OS and drivers again. 3. Upgrade the BIOS and restart the ATCA-7350.
10, 20, 30, 40, 50	Wake from sleep state S1, S2, S3, S4, or S5.	

Related Documentation

B.1 Artesyn Embedded Technologies - Embedded Computing Documentation

The publications listed below are referenced in this manual. You can obtain electronic copies of Artesyn Embedded Technologies - Embedded Computing publications by contacting your local Artesyn sales office. For released products, you can also visit our Web site for the latest copies of our product documentation.

1. Go to www.artesyn.com/computing/support/product/technical-documentation.php.
2. Under FILTER OPTIONS, click the Document types drop-down list box to select the type of document you are looking for.
3. In the **Search** text box, type the product name and click GO.

Table B-1 Artesyn Embedded Technologies - Embedded Computing Publications

Document Title and Source	Publication Number
RTM-ATCA-7150 Installation and Use Manual	6806800E87
RTM-ATCA-7350 Installation and Use manual	6806800H30
ATCA-7350: Control via IPMI, Programmer's Reference	6806800H29
MESC-RTM-7150-FC Installation Information	6806800F90
MESC-RTM-7150-GE Installation Information	6806800F89
ATCA-7X50-HDDx-SAS/SATA Installation Information	6806800E28
ATCA-7x50-MEM Installation Information	6806800E27
ATCA-7350/RTM-ATCA-7350 Release Notes	6806800H69

B.2 Related Specifications

For additional information, refer to the following table for related specifications. As an additional help, a source for the listed document is provided. Please note that, while these sources have been verified, the information is subject to change without notice.

Table B-2 Related Specifications

Organization	Document Title
Intel developer.intel.com/design/servers/ipmi	Platform Management FRU Information Storage Definition v1.0
Intel developer.intel.com/design/servers/ipmi	IPMI Specification V2.0
PICMG picmg.org/specifications.stm	PICMG 3.0 Revision 2.0 Advanced TCA Base Specification PICMG 3.1 Revision 1.0 Specification Ethernet/Fiber Channel

Safety Notes

This section provides warnings that precede potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed during all phases of operation, service, and repair of this equipment. You should also employ all other safety precautions necessary for the operation of the equipment in your operating environment. Failure to comply with these precautions or with specific warnings elsewhere in this manual could result in personal injury or damage to the equipment.

Artesyn Embedded Technologies intends to provide all necessary information to install and handle the product in this manual. Because of the complexity of this product and its various uses, we do not guarantee that the given information is complete. If you need additional information, ask your Artesyn Embedded Technologies representative.

The product has been designed to meet the standard industrial safety requirements. It must not be used except in its specific area of office telecommunication industry and industrial control.

Only personnel trained by Artesyn Embedded Technologies or persons qualified in electronics or electrical engineering are authorized to install, remove or maintain the product.

The information given in this manual is meant to complete the knowledge of a specialist and must not be used as replacement for qualified personnel.

Keep away from live circuits inside the equipment. Operating personnel must not remove equipment covers. Only Factory Authorized Service Personnel or other qualified service personnel may remove equipment covers for internal subassembly or component replacement or any internal adjustment.

Do not install substitute parts or perform any unauthorized modification of the equipment or the warranty may be voided. Contact your local Artesyn Embedded Technologies representative for service and repair to make sure that all safety features are maintained.

EMC

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by Artesyn Embedded Technologies Embedded Computing could void the user's authority to operate the equipment. Board products are tested in a representative system to show compliance with the above mentioned requirements. A proper installation in a compliant system will maintain the required performance. Use only shielded cables when connecting peripherals to assure that appropriate radio frequency emissions compliance is maintained.

Operation

Damage of the Product

Surface of the Product

High humidity and condensation on the product surface causes short circuits.

Do not operate the product outside the specified environmental limits. Make sure the product is completely dry and there is no moisture on any surface before applying power.

Do not operate the product below -5°C.

Overheating and Damage of the Product

Operating the product without forced air cooling may lead to overheating and thus damage of the product.

When operating the product, make sure that forced air cooling is available in the shelf.

Configuration Jumpers

Malfunction of the Product

Reserved jumpers might carry production-related functions and can cause the product to malfunction if their setting is changed.

Therefore, do not change settings of jumpers marked as "Reserved".

Installation

Damage of the Product and Additional Devices and Modules

Incorrect installation or removal of additional devices or modules may damage the product or the additional devices or modules.

Before installing or removing additional devices or modules, read the respective documentation.

Damage of Circuits

Electrostatic discharge and incorrect installation and removal of the product can damage circuits or shorten their life.

Before touching the product or electronic components, make sure that you are working in an ESD-safe environment.

Damage of the Product

Incorrect installation of the product can cause damage of the product.

Only use handles when installing/removing the product to avoid damage/deformation to the face plate and/or PCB.

Damage to the Product/Backplane or System Components

Bent pins or loose components can cause damage to the product, the backplane, or other system components.

Therefore, carefully inspect the product and the backplane for both pin and component integrity before installation.

Artesyn Embedded Technologies Embedded Computing (ENPEC) and our suppliers take significant steps to ensure there are no bent pins on the backplane or connector damage to the boards prior to leaving the factory. Bent pins caused by improper installation or by inserting boards with damaged connectors could void the ECC warranty for the backplane or boards.

Incorrect installation of the product can cause blade damage.

Only use handles for when installing/removing the product to avoid damage/deformation to the face plate and/or PCB

Cabling and Connectors

Damage of the Product

The RJ-45 connector(s) on the face plate are either twisted-pair Ethernet (TPE) or E1/T1/J1 interfaces. Connecting an E1/T1/J1 line to an Ethernet connector may damage the product.

- Make sure that TPE connectors near your working area are clearly marked as network connectors.
- Verify that the length of an electric cable connected to a TPE bushing does not exceed 100 meters.
- Make sure the TPE bushing of the product is connected only to safety extra low voltage circuits (SELV circuits).

If in doubt, ask your system administrator.

Laser

This product is a Class 1 laser product. The use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Environment

Always dispose of used blades, system components and RTMs according to your country's legislation and manufacturer's instructions.

Battery

Board/System damage

Incorrect exchange of lithium batteries can result in a hazardous explosion.

When exchanging the on-board lithium battery, make sure that the new and the old battery are exactly the same battery models.

If the respective battery model is not available, contact your local Artesyn Embedded Technologies sales representative for the availability of alternative officially approved battery models.

Dieses Kapitel enthält Hinweise, die potentiell gefährlichen Prozeduren innerhalb dieses Handbuchs vorrangestellt sind. Beachten Sie unbedingt in allen Phasen des Betriebs, der Wartung und der Reparatur des Systems die Anweisungen, die diesen Hinweisen enthalten sind. Sie sollten außerdem alle anderen Vorsichtsmaßnahmen treffen, die für den Betrieb des Produktes innerhalb Ihrer Betriebsumgebung notwendig sind. Wenn Sie diese Vorsichtsmaßnahmen oder Sicherheitshinweise, die an anderer Stelle dieses Handbuchs enthalten sind, nicht beachten, kann das Verletzungen oder Schäden am Produkt zur Folge haben.

Artesyn Embedded Technologies ist darauf bedacht, alle notwendigen Informationen zum Einbau und zum Umgang mit dem Produkt in diesem Handbuch bereit zu stellen. Da es sich jedoch um ein komplexes Produkt mit vielfältigen Einsatzmöglichkeiten handelt, können wir die Vollständigkeit der im Handbuch enthaltenen Informationen nicht garantieren. Falls Sie weitere Informationen benötigen sollten, wenden Sie sich bitte an die für Sie zuständige Geschäftsstelle von Artesyn Embedded Technologies.

Das System erfüllt die für die Industrie geforderten Sicherheitsvorschriften und darf ausschließlich für Anwendungen in der Telekommunikationsindustrie und im Zusammenhang mit Industriesteuerungen verwendet werden.

Einbau, Wartung und Betrieb dürfen nur von durch Artesyn Embedded Technologies ausgebildetem oder im Bereich Elektronik oder Elektrotechnik qualifiziertem Personal durchgeführt werden. Die in diesem Handbuch enthaltenen Informationen dienen ausschließlich dazu, das Wissen von Fachpersonal zu ergänzen, können dieses jedoch nicht ersetzen.

Halten Sie sich von stromführenden Leitungen innerhalb des Produktes fern. Entfernen Sie auf keinen Fall Abdeckungen am Produkt. Nur werkseitig zugelassenes Wartungspersonal oder anderweitig qualifiziertes Wartungspersonal darf Abdeckungen entfernen, um Komponenten zu ersetzen oder andere Anpassungen vorzunehmen.

Installieren Sie keine Ersatzteile oder führen Sie keine unerlaubten Veränderungen am Produkt durch, sonst verfällt die Garantie. Wenden Sie sich für Wartung oder Reparatur bitte an die für Sie zuständige Geschäftsstelle von Artesyn Embedded Technologies. So stellen Sie sicher, dass alle sicherheitsrelevanten Aspekte beachtet werden.

EMV

Das Produkt wurde in einem Artesyn Embedded Technologies Standardsystem getestet. Es erfüllt die für digitale Geräte der Klasse A gültigen Grenzwerte in einem solchen System gemäß den FCC-Richtlinien Abschnitt 15 bzw. EN 55022 Klasse A. Diese Grenzwerte sollen einen angemessenen Schutz vor Störstrahlung beim Betrieb des Produktes in Gewerbe- sowie Industriegebieten gewährleisten.

Das Produkt arbeitet im Hochfrequenzbereich und erzeugt Störstrahlung. Bei unsachgemäßem Einbau und anderem als in diesem Handbuch beschriebenen Betrieb können Störungen im Hochfrequenzbereich auftreten.

Wird das Produkt in einem Wohngebiet betrieben, so kann dies mit grosser Wahrscheinlichkeit zu starken Störungen führen, welche dann auf Kosten des Produktanwenders beseitigt werden müssen. Änderungen oder Modifikationen am Produkt, welche ohne ausdrückliche Genehmigung von Artesyn Embedded Technologies EC durchgeführt werden, können dazu führen, dass der Anwender die Genehmigung zum Betrieb des Produktes verliert.

Boardprodukte werden in einem repräsentativen System getestet, um zu zeigen, dass das Board den oben aufgeführten EMV-Richtlinien entspricht. Eine ordnungsgemässe Installation in einem System, welches die EMV-Richtlinien erfüllt, stellt sicher, dass das Produkt gemäss den EMV-Richtlinien betrieben wird. Verwenden Sie nur abgeschirmte Kabel zum Anschluss von Zusatzmodulen. So ist sichergestellt, dass sich die Aussendung von Hochfrequenzstrahlung im Rahmen der erlaubten Grenzwerte bewegt.

Warnung! Dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen. In diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen durchzuführen.

Operation

Beschädigung des Produktes

Hohe Luftfeuchtigkeit und Kondensat auf der Oberfläche des Produktes können zu Kurzschlüssen führen.

Betreiben Sie das Produkt nur innerhalb der angegebenen Grenzwerte für die relative Luftfeuchtigkeit und Temperatur. Stellen Sie vor dem Einschalten des Stroms sicher, dass sich auf dem Produkt kein Kondensat befindet und betreiben Sie das Produkt nicht unter [insert temperature here].

Überhitzung und Beschädigung des Produktes

Betreiben Sie das Produkt ohne Zwangsbelüftung, kann das Produkt überhitzt und schließlich beschädigt werden.

Bevor Sie das Produkt betreiben, müssen Sie sicher stellen, dass das Shelf über eine Zwangskühlung verfügt.

Jumper

Fehlfunktion des Produktes

Schalter, die mit 'Reserved' sind, können mit produktionsrelevanten Funktionen belegt sein.

Das Ändern dieser Schalter kann im normalen Betrieb Störungen auslösen.

Installation

Beschädigung des Produktes und von Zusatzmodulen

Fehlerhafte Installation von Zusatzmodulen, kann zur Beschädigung des Produktes und der Zusatzmodule führen.

Lesen Sie daher vor der Installation von Zusatzmodulen die zugehörige Dokumentation.

Beschädigung von Schaltkreisen

Elektrostatische Entladung und unsachgemäßer Ein- und Ausbau des Produktes kann Schaltkreise beschädigen oder ihre Lebensdauer verkürzen.

Bevor Sie das Produkt oder elektronische Komponenten berühren, vergewissern Sie sich, daß Sie in einem ESD-geschützten Bereich arbeiten.

Beschädigung des Produktes

Fehlerhafte Installation des Produktes kann zu einer Beschädigung des Produktes führen.

Verwenden Sie die Handles, um das Produkt zu installieren/deinstallieren. Auf diese Weise vermeiden Sie, dass das Face Plate oder die Platine deformiert oder zerstört wird.

Beschädigung des Produktes, der Backplane oder von System Komponenten
Verbogene Pins oder lose Komponenten können zu einer Beschädigung des Produktes, der Backplane oder von Systemkomponenten führen.
Überprüfen Sie daher das Produkt sowie die Backplane vor der Installation sorgfältig und stellen Sie sicher, dass sich beide in einwandfreien Zustand befinden und keine Pins verbogen sind.

Artesyn Embedded Technologies Embedded Computing (ENPEC) und unsere Zulieferer unternehmen größte Anstrengungen um sicherzustellen, dass sich Pins und Stecker von Boards vor dem Verlassung der Produktionsstätte in einwandfreiem Zustand befinden. Verbogene Pins, verursacht durch fehlerhafte Installation oder durch Installation von Boards mit beschädigten Steckern kann die durch ECC gewährte Garantie für Boards und Backplanes erlöschen lassen.

Kabel und Stecker

Beschädigung des Produktes

Bei den RJ-45-Steckern, die sich an dem Produkt befinden, handelt es sich entweder um Twisted-Pair-Ethernet (TPE) oder um E1/T1/J1-Stecker. Beachten Sie, dass ein versehentliches Anschließen einer E1/T1/J1-Leitung an einen TPE-Stecker das Produkt zerstören kann.

- Kennzeichnen Sie deshalb TPE-Anschlüsse in der Nähe Ihres Arbeitsplatzes deutlich als Netzwerkanschlüsse.
- Stellen Sie sicher, dass die Länge eines mit Ihrem Produkt verbundenen TPE-Kabels 100 m nicht überschreitet.
- Das Produkt darf über die TPE-Stecker nur mit einem Sicherheits-Kleinspannungs-Stromkreis (SELV) verbunden werden.

Bei Fragen wenden Sie sich an Ihren Systemverwalter.

Laser

Einige Varianten des Produktes sind Laserprodukte der Klasse 1. Um nicht schädlicher Laserstrahlung ausgesetzt zu werden, beachten Sie die folgenden Hinweise: Anpassungen am Produkt, die Bedienung von Steuerelementen sowie die Durchführung von Prozeduren dürfen nur gemäß den Anweisungen in diesem Dokument erfolgen.

Umweltschutz

Entsorgen Sie alte Batterien und Blades/RTMs stets gemäß der in Ihrem Land gültigen Gesetzgebung und den Empfehlungen des Herstellers.

Batterie

Beschädigung des Produktes

Ein unsachgemäßer Einbau der Batterie kann gefährliche Explosionen und Beschädigungen des Produktes zur Folge haben.

Verwenden Sie deshalb nur den Batterietyp, der auch bereits eingesetzt wurde und befolgen Sie die Installationsanleitung.

Falls der entsprechende Batterietyp nicht verfügbar ist, kontaktieren Sie Ihren lokalen Artesyn Embedded Technologies-Ansprechpartner und erfragen Sie die Verfügbarkeit von alternativen, offiziell zugelassenen Batteriemodellen.



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